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The Journal of the

International College of Surgeons

FOURTH INTERNATIONAL ASSEMBLY
OF
INTERNATIONAL COLLEGE OF SURGEONS
In Conjunction with Eighth National Assembly of United States Chapter
WAR SURGERY AND REHABILITATION PROGRAM
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PRELIMINARY PROGRAM

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MORPHINE frequently boomerangs—producing undesirable by-effects that often becloud the clinical picture. Pantopon, the Roche sedative-analgesic, is less likely to cause unwelcome side reactions. It contains *all* the alkaloids of opium in a highly purified form, free from irritant gums and resins, affording a smooth pharmacologically balanced action. Try Pantopon in place of morphine—⅓ gr. where ¼ gr. of morphine is indicated . . .

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CONSTITUTION AND BY-LAWS OF THE UNITED STATES CHAPTER

(Continued from page IV)

Annual Dues shall be payable in advance.

ARTICLE XIX.

Meetings.

1. Meetings of the House of Delegates and of the General Assembly shall take place at the time and place as directed by the National Executive Council.

2. The year of the International Assembly meeting, the annual meeting of the United States Chapter shall be held in conjunction with the International Assembly, if at all possible.

3. If unable to meet with the International Assembly, the United States Chapter shall send an official delegation to the International meeting.

4. If unable to meet with the International Assembly, the United States Chapter shall provide for regional meetings or a National meeting as conditions may warrant, so timed as not to interfere with the attendance to, and interest in the International meeting.

5. If the annual meeting cannot be held at the time and place set because of some extraordinary reason, then the Executive Council shall determine the time and place for the meeting.

ARTICLE XX.

General Scientific Assembly. The National Scientific Assembly shall devote its time and efforts to the presentation and discussion of subjects pertaining to *Surgery* in its widest application. It shall be held annually, except as provided in Article XVIII.

Program. The program shall be arranged as provided in the By-laws.

ARTICLE XXI.

1. *Quorum.* At the annual meeting of the House of Delegates, the members of the Board of Governors, of the Board of Trustees, and of the Executive Council present at the meeting shall constitute the *quorum.*

2. *Proxies.* Members of the Board of Governors, of the Board of Trustees, and of the Executive Council, if unable to attend the House of Delegates meeting, may delegate their power to vote by proxy to any member of the above mentioned bodies, who is in attendance and who will then cast their votes.

3. *Proxies* shall be filed with the Secretary of the Executive Council at the meeting.

ARTICLE XXII.

Constitutional Amendments.

1. At the stated Annual meeting of the House of Delegates, any Article of the Constitution may be amended by a two-thirds vote of the delegates registered at the meeting, provided, however, that Paragraph 6 of Article IX of the By-laws of the Central Organization of the International College of Surgeons shall have been fully complied with.

2. During the interval from one general meeting to another amendments may be adopted by the duly recorded vote of the Executive Council. Such amendments shall be regarded as valid until they have been adopted by the House of Delegates at the next general annual meeting.

3. The written request for an amendment signed by one hundred (100) members of the United States Chapter, or presented by the Regent of any District shall be mandatory for the Executive Council to consider the request and vote upon it, as it best sees fit.

4. Any amendment to the Constitution legally made in the Constitution and By-laws of the United States Chapter becomes binding upon each member of the United States Chapter.

ARTICLE XXIII.

Vacancies.

Any vacancy occurring in the various committees of the United States Chapter through death, resignation or any other cause, shall be filled during the interim by the next ranking officer of that particular committee, until the Executive Council shall have taken a decision in the matter and appointed a successor to fill the unexpired term of that particular office.

ARTICLE XXIV.

Autonomy of the Chapter.

The United States Chapter is autonomous in its function and is free to formulate by-laws to suit its respective needs as long as such by-laws abide by, and conform to, the Constitution and By-laws of the International College of Surgeons.

ARTICLE XXV.

Bequests of Funds.

1. Voluntary donations, gifts, bequests, or legacies to the United States Chapter become the unrestricted property of, and shall be used at the sole discretion of the Chapter, subject, nevertheless, to any specific provisions incorporated in the deed of gift.

2. All property, be it real estate, liquid assets or otherwise, shall be safeguarded by the Board of Trustees and the Executive Council.

ARTICLE XXVI.

Upon the adoption of this Constitution all other Constitutions are hereby repealed and declared *null* and *void.*

BY-LAWS

ARTICLE I.

Dues and Assessments.

1. The Fellowship entrance fee shall be $100.00, but this fee may be waived at the discretion of the Executive Council. The dues of a Fellow shall be $25.00 per annum for twenty years after which he shall be exempt from any further dues.

2. The entrance fee for a Member shall be $75.00. A Member shall pay dues of $25.00 per annum for 25 years after which no further dues shall be required.

3. The entrance fee for an Associate Member shall be $50.00. It may be paid in two installments, $25.00 upon application and $25.00 within 90 days. An Associate Member shall pay dues of $15.00 per annum for 35 years after which no further dues shall be required.

4. Masters shall pay no dues unless they hold an active Fellowship in the College.

5. The payment of dues shall entitle a member to copies of the Journal of the International College of Surgeons without additional cost.

6. Special assessments may be ordered by a two-thirds vote of the Assembly of the Chapter.

7. Dues and assessments shall be payable on or before January first of the calendar year for which such dues are levied.

8. Any Fellow, Member, or Associate Member, if he so chooses, may pay his Life Membership dues in one sum of $400.00.

9. Dues and Assessments shall be collected by the Executive Secretary or by the Business Secretary of the College, and turned over to the Treasurer of the Chapter.

10. In States where Guilds are organized, $5.00 from

each entrance fee for Fellowship or Membership, and $10.00 from each Associate Membership, shall be remitted to the respective Guild Treasurer by the National Treasurer, and $2.00 from the annual dues of each Member, and each Fellow, in such States, shall be remitted to the State Guild Treasurer by the National Treasurer, and each Guild Treasurer shall submit semi-annually, a financial statement to the National Treasurer, and said report shall be incorporated in the National Treasurer's report.

11. The record of payment of dues and assessments on file in the office of the Executive Secretary, or of the Business Secretary, shall be evidence of that member's fulfillment of his financial obligations to the Chapter, which shall give him the right to participate in the activities and proceedings of the College.

12. *Arrears in Membership.* A member of the College shall be deemed delinquent in the relationships as a member, if his dues and assessments are not paid ten months after the first of January of the calendar year.

13. *Penalty for Failure to Remit.*

a. A delinquent member, because of failure to pay his annual dues and assessments, shall be held suspended, in which case he shall not be permitted to participate in any of the proceedings of the College, and he shall not receive the Journal of the International College of Surgeons.

b. After one year of delinquency in paying dues and assessments a member shall be dropped from the membership roster.

c. A member who has been dropped from the membership roster because of delinquency in paying dues and assessments may be reinstated with full privileges upon payment of his arrears and approval by the Executive Council.

d. A member who has been permanently dropped from the membership roster shall be requested by the Executive Secretary to return his diploma.

Article II.

Disciplinary Measures.

1. Infractions of the Code of Ethics prescribed by the American Medical Association and the American College of Surgeons shall be sufficient cause for representations before the Executive Council for disciplinary action against the accused.

2. The Executive Council may originate action for the discipline of members who obstruct the work of the Chapter or fail to discharge their obligations to it.

3. The Executive Council may expel said members on technical grounds of lack of sympathy with the work of the College.

4. The action of the Executive Council shall be final.

5. The Executive Council shall have the right to obtain the surrender of diplomas and other membership credentials held by members who have been expelled after due action.

6. A member cited for disciplinary action shall have the right of hearing before the Executive Council acting as the *Board of Censors* and may appeal to the House of Delegates.

7. Any officer of the Chapter may be removed from office for cause by the Executive Council, but shall have the right of appeal with counsel to the House of Delegates which may confirm or reverse the action of the Executive Council.

Article III.

Conferring of Degrees, Diplomas.

1. The conferring of degrees and the distribution of diplomas to the newly elected candidates shall be the occasion for a formal ceremony.

2. The Executive Secretary of the Chapter shall read the names of the successful candidates and present them to the National President.

3. The National President shall in turn present the candidates to the International President, who shall admit them to the fold of the College and deliver to them the diplomas corresponding to their degrees.

4. If no International President, or if no International Officer representing the International President is present, the National President shall be empowered to deliver the diplomas to the candidates.

5. The incoming and outgoing Presidents shall deliver short, appropriate addresses.

Article IV.

Scientific General Assembly. Scientific Program.

1. The Scientific Program of the General Assembly shall be determined by the Program Committee of the Chapter, which shall be appointed by the President of the Chapter.

2. *Place of Meeting.* The place of meeting shall be determined by the Executive Council and its President. No Chapter sessions shall be held at the same time as the general International Assembly.

3. *Acceptance of Papers and Time Limit for Papers.* No paper shall be presented before a session unless the title and an abstract of the paper shall be in the hands of the Program Committee at least sixty days before the first day of the general meeting.

4. The time limit for the delivery of papers shall be fixed by the Program Committee.

5. *Property of Papers.* All papers read before the Chapter shall become the property of the U. S. Chapter of the International College of Surgeons and immediately after being read shall be deposited with the Secretary of the Section, if read before a Section or with the Executive Secretary, if read before the General Assembly.

6. No author shall cause a paper to be read before the Chapter to be published elsewhere as an original paper until it has first been published in the Journal of the International College of Surgeons or refused publication.

7. No Fellow or Member of the United States Chapter of the International College of Surgeons shall be allowed to occupy the floor longer than five minutes to the exclusion of other members who may desire to speak. This does not apply, of course, to those scheduled to make addresses.

8. No Fellow or Member of the United States Chapter of the International College of Surgeons shall be entitled to the floor for a second time during the same discussion until every other Fellow or Member who may desire has had an opportunity to speak.

9. No Fellow or Member shall be permitted to address the United States Chapter of the International College of Surgeons a second time during the same session on the same subject for a longer period than five minutes without the consent of the President.

10. Papers read before the United States Chapter of the International College of Surgeons shall be the property of the United States Chapter and subject to its disposal. Surgeons reading papers shall afterwards hand the same to the Secretary, as outlined in Article II, number 7.

11. Those Fellows or Members receiving invitations to address the Assembly shall notify the Secretary the period of time required to deliver his respective paper and designate the paraphernalia required for presentation. All motion pictures shall be presented to the Program Committee for approval before presentation.

Article V.

Meetings of the House of Delegates.

1. The House of Delegates shall meet annually the day preceding the time and place of the annual meeting of the United States Chapter, and independent of the International Assembly.

2. *Quorum.* The delegates and officers of the Chapter registered at the meeting shall constitute a quorum.

3. *Order of Business.* The following shall be the order of business for the opening and closing sessions of the House of Delegates.

A. *Opening Session.* The opening session shall take place independently of the General Assembly.

1. Call to order by the President.
2. Roll call.
3. Reading of the minutes of the last meeting.
4. Reports of Officers.
5. Reports of Standing Committees.
6. Reports of Special Committees.
7. Introduction of Resolutions.
8. Miscellaneous Business.

B. *Closing Session.* The closing session shall take place in conjunction with the General Assembly.

1. Roll call.
2. Consideration of unfinished business of the preceding session.
3. Reports of Reference Committees.
4. Miscellaneous Business.
5. Report of the Committee on Nominations and the call for nominations from the floor.
6. Election of Officers.
7. Announcement of Committees appointed by the newly installed President and action thereon by the House of Delegates.
8. Unfinished Business.
9. Choice of next meeting place.
10. Final Adjournment.

Article VI.

1. The order of business may be modified by a majority of the delegates present, at that session.

2. All parliamentary procedures of the United States Chapter shall be under Robert's Rules of Order.

Article VII.

Nomination and Election of Officers.

Committee on Nominations and Election of Delegates.

1. The President shall appoint a Nominating Committee composed of three members (delegates). The Committee on Nominations shall report to the House of Delegates the ticket containing the names of the prospective officers.

"This slate of officers shall be presented to the House of Delegates at the annual stated meeting, when additional nominations from members of the House of Delegates shall be in order."

2. The nominations for the various offices may also be made by any member of the House of Delegates.

3. Not more than three minutes shall be devoted to the nominating speech for the President-elect.

4. All elections shall be by ballot. In case no nominee receives a majority of the votes cast on the first ballot, the nominee receiving the lowest number of votes on the ballot shall be dropped and a new ballot taken. This procedure shall be followed until a nominee is elected by receiving a majority of the votes taken.

5. The election of delegates to the House of Delegates of the International Assembly shall be in accordance with Article XI, paragraph 1 of the International Constitution.

Article VIII.

Duties of Officers.

1. *President.*

a. The President shall preside at all meetings of the Assembly, of the House of Delegates and of the Executive Council.

b. He shall be ex-officio member of all the committees of the Chapter.

c. He shall appoint all committees for the selection of which other provisions have not been made.

d. He shall deliver the annual address at the meeting of the General Assembly.

e. At the beginning of each fiscal year he shall submit to the Executive Council for its approval a budget of the contemplated expense of the ensuing year based upon the assets of the Treasury.

f. He shall see that the budget as provided by the Executive Council is lived up to, unless the latter shall authorize the President to disregard the budget.

g. All invoices for expenses of the Chapter shall be signed by the Executive Secretary and countersigned by the President before they are submitted to the Treasurer for payment.

h. The President shall see that an itemized statement of all expenditures of the Chapter is presented to the Executive Council for its approval every month.

i. In a general way the President shall perform such other duties as may pertain to the principal administrative officer of a corporation.

j. The President shall have the privilege to call emergency meetings of the Executive Council, providing at least one week's notice to given to the members of the Council.

k. All important issues, policies and messages to the membership concerning the welfare of the Chapter shall be submitted to the Executive Council before they are acted upon by the President. He shall at all times exert every effort to maintain the *morale* of the Chapter at its highest possible level, and shall discourage all attempt at *cliquism* and political *intrigue.*

1. As immediate Past-President he shall become automatically a member of the Executive Council for two years following his term of office as President.

2. *President-elect.*

a. The President-elect shall take office at the expiration of the term of office of the President.

b. As *President de facto* he shall attend all meetings of the Executive Council with power to vote.

c. He shall do everything in his power to acquaint himself with the affairs of the College.

3. *Vice Presidents.*

a. The Vice Presidents, five in number, shall be among the national officers. They shall assume in their respective order of seniority the duties of the President during the absence or disability of the latter. If the office of the President becomes vacant, the senior Vice-President shall succeed to the Presidency.

4. *Treasurer.*

a. The Treasurer shall receive all funds due to the Chapter from any source whatsoever in the manner as outlined by the Constitution.

b. He shall deposit and keep all funds of the Treasury in a National Bank, in the name of the United States Chapter of the International College of Surgeons.

c. He shall keep a complete set of books concerning the receipts and expenditures of the Chapter, subject

to the direction of the Executive Council and its President.

d. He shall not pay monies out of the Treasury unless such vouchers are signed by the Executive Secretary and countersigned by the President.

e. He shall submit every month to the Executive Council an itemized statement of the financial transactions and situation of the Chapter.

f. He shall render an annual trial balance statement of his accounts to the Executive Council. For this purpose he shall employ a certified public accountant.

g. At the expense of the Chapter he shall give bond in such amount as shall be required by the Executive Council.

h. He shall also act as the Treasurer of the Board of Trustees.

i. At all times he shall have the privilege of making suggestions as to the improvement of the Treasury.

5. *National Executive Secretary.*

a. The National Executive Secretary shall be *ex-officio* Secretary of the House of Delegates.

b. As executive agent of the Chapter, he shall transact its business under the direction of the Executive Council.

c. He shall collect all dues and assessments from the members of the chapter and forward them to the Treasurer.

d. He shall have charge of the business office of the Chapter and may employ such aid as shall be authorized by the Executive Council.

e. He shall be custodian of all books and papers belonging to the Chapter except those of the Treasury.

f. He shall provide for the registration of members at the annual meetings and shall provide for reporting the proceedings of the annual meeting.

g. He shall conduct the official correspondence, notifying members of the meetings, officers of their committees, of their appointments and duties and shall perform such other duties as may be assigned to him by the Executive Council.

h. He shall notify applicants concerning the success or failure of their applications.

i. After the approval of the Executive Council, he shall submit to the International Council an annual report of the affairs of the Chapter.

j. At the expense of the College both he and the Business Secretary shall give bond in such amount as may be required by the Executive Council.

k. With the authorization of the Executive Council, the Executive Secretary may delegate most of the above duties to a *Business Secretary* who need not be a physician, nor a member of the Chapter.

Article IX.

Eligibility of Officers for Re-election.
Re-election of Officers.

1. The retiring President shall *not be eligible* for re-election to the Presidency.

2. The Executive Secretary and the Treasurer of the Chapter may serve indefinitely, provided their election is confirmed at each biennial meeting.

3. Nothing in the By-laws shall be construed as forbidding the re-election of officers excepting the President, after an interruption of consecutive service.

Article X.

Board of Trustees.

1. *Meetings of the Board of Trustees.*

a. The Board of Trustees shall hold meetings during the annual meetings of the Chapter and at such other times as necessity may require at the call of the President, or on petition of two members of the Board of Trustees.

b. If interim meetings cannot be held, business may be transacted by mail.

c. The Board of Trustees shall record in the Journal of the International College of Surgeons its meetings and activities after approval by the Executive Council.

2. *Duties of the Board of Trustees.*

a. The Board of Trustees shall receive and manage, with the approval of the Executive Council, all gifts, bequests, legacies, whatever their nature, made to the United States Chapter by generous contributors.

b. The Board of Trustees shall be subservient to the Executive Council and its President.

c. The Board of Trustees shall invest in approved S. E. C. securities any or all surplus monies, which have accumulated in the Treasury of the United States Chapter, and which are not needed for the running expenses of the Chapter. These reserves shall, however, be delivered on demand to the Executive Council if, and when needed.

d. The Board of Trustees shall have the power to solicit contributions and bequests for the United States Chapter toward the establishment of funds for purposes designated and approved by the National Executive Council.

e. Upon receipt of gifts, bequests, be they in the nature of real estate, or liquid assets, the Board of Trustees shall, with the full co-operation of the National Executive Council, proceed immediately to undertake the necessary steps to find the best, safest and most efficient way to invest and manage the newly acquired assets, as well as the accumulated unused surplus monies in the Treasury.

f. The Board of Trustees shall make reports to the Executive Council at intervals stipulated by the latter.

g. The Board of Trustees, after conferring with the Executive Council, shall have the right to refuse contributions or donations, if it is deemed wise to do so.

Article XI.

The Executive Council.

1. During the interim between annual meetings of the United States Chapter the Executive Council is the *supreme legislative and executive body.* It is answerable to the House of Delegates.

2. The Executive Council shall transact the essential business of the Chapter and exercise legislative power within the limits of the Constitution.

3. The Executive Council shall have the jurisdiction over the Board of Governors and the Board of Trustees.

4. The Executive Council shall act as a Committee on Credentials, whose duties are outlined in the By-Laws, Article X.

5. The Executive Council shall provide for the creation of a *Board of Examiners,* composed of five members, including its chairman, to serve for two years each. For duties of the Committee see By-Laws, Article IX.

6. The Executive Council shall appoint each year in advance a *Scientific Program Committee* composed of three members, one of them being the Executive Secretary, who shall act as *Scientific Secretary.*

7. External and diplomatic relations with other

(Continued, page 153)

The Journal of the
International College of Surgeons

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Primary Malignant Tumors of Bone with Special Reference to Osteogenic Sarcoma*

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THE discussion of malignant bone tumors must, of necessity, be a repetition of that which has already been said or written. Yet, in spite of the voluminous literature, much confusion still exists in the minds of students and practitioners concerning the classification of these tumors, the pathologic diagnosis, the diagnostic procedure, and their proper treatment. No new data are available concerning the etiology. Trauma is still mentioned as an associated factor in a certain percentage of malignant bone tumors.

*Read before the Seventh National Assembly of the International College of Surgeons, Denver, Colorado, July 15-18, 1942.

After looking over the statistics of our clinic and those of many others, one wonders whether malignant bone tumor is the dread disease it appears to be, or whether, in our attempt to make certain of the diagnosis by specimen and punch biopsy, we do not spread the disease so that early metastasis and subsequent high mortality result. Is the specimen and punch biopsy a safe procedure, or is it, perhaps, responsible for the high mortality rate which osteogenic sarcoma now enjoys by metastasizing the disease, just as squeezing a boil spreads the infection? By the use of this method, are we not breaking down protective barriers in our search for a diagnosis?

In 1898, Keen performed a scapulo-humeral amputation on a sister of the late Dr. Willis F. Manges. The pathologic specimen was examined by W. M. Late Coplin, Professor of Pathology in Jefferson Medical College, and a diagnosis of osteogenic sarcoma was made. This patient is still living 44 years after the operation. No specimen or punch biopsy was done in this case. I know that it may be argued that Keen removed a giant-cell tumor, but it is hardly likely that he would report it as an osteogenic sarcoma, or that he would make the wrong diagnosis, either alone or in conjunction with Coplin, even at that time.

In contrast to this remarkable feat, there are two cases of osteogenic sarcoma in our series, treated just as radically as that of Keen. The first case received preliminary X-ray therapy, followed by punch biopsy and radical hip-joint amputation. Death from metastasis to the lungs resulted within eight months. In the second case, preliminary x-ray treatment and punch biopsy were followed by scapulo-humeral amputation. Death occurred seven months later from metastasis to the lungs. In each of these cases the diagnosis was made within six months of the onset of the disease, and surgery was performed after the completion of the preliminary X-ray treatment.

Concerning the diagnosis of osteogenic sarcoma, the roentgenologist and pathologist are equally in the dark when it comes to reaching a conclusion, and it is at this point that the tide turns between delayed and early operation.

For the past two years, we have been doing experimental work on the injection of the blood vessels of the extremity in which the growth exists. Our results have been encouraging but not decisive, and it was not until the work of Alberto Inclan, of Havana, Cuba, that any convincing facts were revealed. Inclan shows that the most striking and characteristic arteriographic sign of bone malignancy is the filling in of the stroma of the newgrowth by numerous vessels, forming an erratic network and showing the extension of the invading tumor. Careful examination of the arteriogram under a magnifying glass enables one to trace these vessels and their irregular disorderly distribution into the tumor mass.

Another evidence of malignancy is the presence of new atypical arterial circulation with pedicles from the main artery

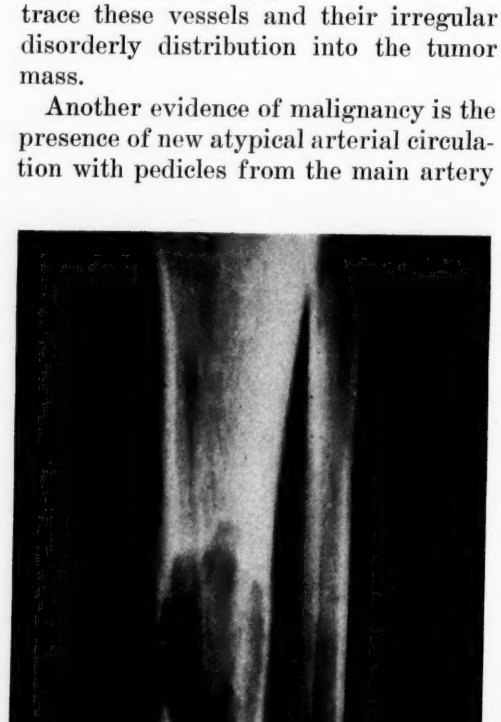

Fig. 1. X-ray of Adamantinoma of right tibia.

and numerous irregular branches entering the bone lesion. This is an important observation, since it defines clearly the limits of the lesion.

In our opinion, Inclan's next statement that there is a premature appearance of a very rich venous circulation with the formation of gross venous pedicles arising from the tumor, and entering the neighboring vein, is of the utmost importance.

His final conclusion is that in the more advanced cases there is increased arterial circulation which is perpendicular to the bone and has the characteristic X-ray appearance so frequently spoken of by roentgenologists as pathognomonic. Inclan shows positively that this is the very late manifestation of the disease.

We find, therefore, that three distinct factors in the diagnosis of osteogenic sarcoma are promulgated in Inclan's article, *viz:*

1. That the sun-ray manifestation in which the roentgenologist can conclusively make the diagnosis is a very late sign.

2. That the very rich venous circulation which exists early in osteogenic sarcoma is not only diagnostic, but also bears out the conclusion that *specimen and punch biopsy spreads the disease into the venous circulation by rupturing and damaging these structures.*

3. That arteriography, as carried on by Inclan, easily distinguishes the benign from the malignant tumor, and rules out the various types of inflammatory bone lesions which are often confused with malignant bone tumors by the roentgenologist and the clinician.

One of the cases in our series, a child of eight years, was diagnosed by the roentgenologist as osteomyelitis, and, clinically, the case conformed to that diagnosis. Repeated operations were performed over a period of one year, at the end of which time the child died. Following autopsy, the pathologic diagnosis of liposarcoma of the femur was made by Baxter L. Crawford of Jefferson Hospital, and confirmed by Ewing.

A second error in diagnosis had a calamitous result. A man, aged 47, fell and struck his shin. A diagnosis of Garré's osteomyelitis was made. A biopsy specimen was taken and the diagnosis of the pathologist was as confusing as that of the roentgenologist (Fig. 1). This case was reviewed by the leading roentgenologists of Philadelphia, but no conclusion was reached. The specimen was finally sent to the Ewing Clinic, where a diagnosis of adamantinoma of the tibia was made. We all know that this is a relatively benign tumor and that it is in this type that the best results should be obtained. A mid-thigh amputation was performed and the patient was given post-operative X-ray treatments, yet within nine months he was dead with metastasis to the lungs.

Many similar cases could be cited, but I believe that enough has been said to make us wonder whether we are not sacrificing the life of the patient in our attempt to be positive of our diagnosis.

In this series of cases studied over a period of 20 years, 43 patients with osteogenic sarcoma were observed, 10 with Ewing's tumor, three with multiple myeloma, one with adamantinoma of the tibia, one with liposarcoma of the bone, and 35 cases of osteoma or osteochondroma. In this last group a certain percentage became malignant. Under the heading of osteogenic sarcoma we have included the cortical, the subperiosteal, the periosteal, the fibrosarcomas and the myxosarcomas.

OSTEOGENIC SARCOMA

Histologic study was made in every case of osteogenic sarcoma included in this group, and several of them are listed

in the Bone Sarcoma Registry. These are all proved cases from this institution in a period of 20 years. Certain features of these tumors are worthy of further analysis. The diagnosis was based on clinical findings, X-ray study, and tissue examinations. Certain lesions presented difficulty in differentiation, especially osteomyelitis, Ewing's tumor, Garré's osteomyelitis, tuberculosis, lues and giant-cell tumor.

The histologic diagnosis was determined by aspiration biopsy in three cases, open biopsy in eight cases, and operative specimen in 32 cases.

The age incidence in this series was basically the same as in other series, with a slightly higher proportion of older individuals than usual (Table I).

TABLE I.
AGE GROUPING

Age	No.	Dead	Living
0-10	2	1	1
10-20	12	10	2
20-30	8	5	3 (1 with disease)
30-40	5	4	1
40-50	6	4	2 (1 with disease)
50-60	8	5	3 (2 with disease)
60-70	2	1	1 (with disease)

As is the usual experience, the best chance of five-year survival seems to be in the age group between 10 and 30.

Approximately twice as many cases occurred in males as in females, and with more long survivals (Table II).

TABLE II.
SEX GROUPING

Sex	No.	Dead	Living
Male	27	19	8 (2 with disease)
Female	16	11	5 (3 with disease)

Meyerding reported 146 males and 70 females in a total of 216 cases. Coley reported better survival rates in females (28 per cent) than in males (18 per cent) in a series of 160 cases.

The duration of the tumor on admission to the hospital is interesting. The shortest time noted was four days, the longest 18 years (Table III).

TABLE III.
DURATION OF TUMOR

Time	No.	Dead	Living
Under 1 month	1	1	
1-3 months	10	6	4
3-6 months	7	5	2 (1 with disease)
Under 1 year	6	6	
Over 1 year	16	9	7 (3 with disease)

Many of the tumors present over one year were low-grade, malignant lesions.

TABLE IV.
TIME BETWEEN TRAUMA AND ONSET OF LOCAL FINDINGS

Time	Pain	Time	Tumor
Continuous	1	Continuous	1
10 days	1	10 days	1
1 month	6	1 month	3
2 months	2	5 weeks	1
3 months	2	2 months	1
4 months	1	2½ months	2
6 months	2	3 months	1
14 months	1	14 weeks	1
2 years	1	6 months	1
4 years	2	16 months	1
Indefinite	1	3 years	1
		4 years	1
		5 years	1
		Indefinite	1
		Tumor not noted by patient	3

The question of trauma as a cause of osteogenic sarcoma has been debated extensively. It is our feeling that while not susceptible of accurate proof or disproof, in certain cases trauma may play a part in the genesis of such a tumor. In this series a definite history of trauma to the part involved was given by 40 of 43 patients, and was questionable in two other cases. In most instances, trauma was of minor character, but in one case a fracture of the humerus was followed

one and one-half years later by an osteogenic fibrosarcoma at the same site (Table IV).

The distribution with regard to the bone involved was not far from that usually reported, and the best prognosis on the basis of so small a number would seem to be in lesions of the tibia and lower femur (Table V).

TABLE V.
BONE INVOLVED

Bone	Total Cases	Dead	Living
Tibia	13	10	3 (1 with disease)
Femur	11	8	3
Humerus	3	2	1
Fibula	2	2	
Ilium	4	2	2 (with disease)
Maxilla	2	2	
Mandible	1		1
Vertebra	2	2 (Post-op.)	
Scapula	2	1	1 (with disease)
Sternum	1		1
Rib	1	1	
Coracoid	1		1

As might be expected, the lesions of lower degree of malignancy carried a more favorable prognosis. The group of fibrosarcoma was reported as primary bone tumor, but the exact site of origin was not specified (Table VI).

In all but four of the 43 patients, surgery beyond biopsy was permitted. Four patients permitted biopsy, but nothing more (Tables VII and VIII).

TABLE VII.
PROCEDURES OF TREATMENT

Procedure	No. of Cases
Amputations	23
Adequate operations on extremities	1
Adequate operations on trunk	5
Biopsy	11
Inadequate operations	3

TABLE VIII.
FURTHER SUBDIVISION OF PROCEDURES

Procedure	No. of Cases
Local operation	9
Local operation followed by amputation	3
Biopsy only	4
Biopsy followed by amputation	1
Biopsy followed by other operative procedures	6
Curettage followed by amputation	2
Laminectomy	2
Exploratory thoracotomy	2
Amputation only	18

Thirty-nine of the 43 patients received other forms of therapy (Table IX).

TABLE IX.
OTHER FORMS OF TREATMENT

Treatment	Total Cases	Dead	Living
Pre-operative X-ray	21	14	7 (3 with disease)
Post-operative X-ray	13	7	6 (1 with disease)
Radium	5	3	2
Coley's fluid	4	4	
Lead	4	3	1
Iron ascorbate	2	1	1
X-ray only	1		1 (with disease)

TABLE VI.
PATHOLOGIC GROUPING

	Total Cases	Dead	Living	Survival %
High Grade	2	2		0
Intermediate or not specified	30	24	6 (3 with disease)	10
Chondrosarcoma	5	2	3 (1 with disease)	40
Periosteal fibrosarcoma	1	1		0
Fibrochondro-osteosarcoma	1		1	100
Fibrosarcoma	4	2	2	50

It can be seen that radiation apparently improved the outlook, but that it was used almost exclusively in conjunction with surgical procedures.

Biopsy.—Open biopsy has been discarded almost entirely as dangerous, both locally and because of possible spreading of metastasis. Biopsy, with the intention of amputation, based on frozen section tissue study, is often impossible and injudicious because of the difficulty in the preparation of sections and the uncertainty of snap diagnosis in bone lesions.

Aspiration biopsy was sufficient for diagnosis in several cases, but the value of this procedure depends upon the skill in the technic and the services of an exceptionally skilled pathologist. Authorities are not entirely certain that the procedure is without danger. It would not seem to be dangerous to aspirate a tumor which has already broken through its capsule.

When to Amputate.—The recent reports of Ferguson, and the older work of Albee and others, have brought to the fore the possible danger of too early amputation of an uncontrolled, rapidly-growing osteogenic sarcoma. The analysis of the first 400 cases from the Bone Registry would indicate that indiscriminate early amputation may be fatal in that 15.8 per cent survived early amputation, while 31 per cent survived late amputation for a period of five years. This would seem to reverse the accepted belief of amputation as soon as possible. This is now changed to amputation at the earliest optimum time. The optimum time is interpreted as seven months after the onset, or earlier, following radiation, and at a time when the blood phosphatase is not elevated and the local lesion is not expanding rapidly. Detailed observations and adequate study of new cases must be made to check up on the value of these conclusions. We have available phosphatase studies on only a few of the most recent cases. The last one studied in this manner was a 23-year-old colored female with a lesion at the lower end of the femur. She was treated extensively with radiation, with no response clinically or radiographically. Amputation was performed three and one-half months following the onset. The blood phosphatase was normal. Death with pulmonary metastasis occurred within eight months following the onset.

We were exceptionally fortunate in obtaining a complete follow-up study on our patients (Table X).

TABLE X.

PRESENT STATUS OF PATIENTS

Status	No. of Cases
Dead of disease	28
Living with disease	5
Living without evidence of disease	8
Operative deaths	2

TABLE XI.

RESULTS OF TREATMENT

Results	No. of Cases	Dead	Living	Survival %
Refused amputation	4			
Non-resectable	7			
Amputations	23	18	5	21
Other operative procedures	9	5	4	(excisions)
Total	43	23	9	21

Of 32 patients on whom an adequate operation could be done, eight are living without evidence of disease (25 per cent). Six of the 32 cases (18.7 per cent) survived five years (Tables XI, XII and XIII).

The survival rate in all the recently reported series is nearly the same.

TABLE XII.
LENGTH OF SURVIVALS

Length of Survivals
12 years, 6 months
11 years, 6 months
9 years, 10 months
8 years
6 years, 9 months
5 years
4 years, 6 months
3 years, 3 months

Case 4.—Thirteen year-old male with typical osteogenic sarcoma of the lower end of the femur. He had pre-operative radiation and amputation of the upper one-third of the femur eight months after the onset, and is living and well eight years later.

Case 5.—Twenty-three year-old female with fibrosarcoma of humerus. She had pre- and post-operative radiation and amputation of the upper one-third of the humerus eight-

TABLE XIII.
SURVIVAL RATE

	No. of Cases	3 Yr. Survivals %	5 Yr. Survivals %
Meyerding and Valls	216	31.1	20.3
Coley	160		40—low grade 15-16—all others
Bone Registry	400		15.8—early amputation 31—later amputation
Jefferson 1926-1941	43	25	18.7

Analysis of Surviving Cases.—Case 1.—Thirty-five year-old male with a typical osteogenic sarcoma of the upper end of the tibia. He had pre- and post-operative radiation and amputation two years and eight months after the onset, and is living and well twelve and one-half years later.

Case 2.—Seventeen year-old male with typical osteogenic sarcoma of the upper end of the tibia. He had pre- and post-operative radiation and mid-thigh amputation seven months after the onset, and is living and well eleven and one-half years later.

Case 3.—Fifty-one year-old male with fibrochondro-osteosarcoma of the lesser trochanter of femur. He had excision and post-operative radiation three months after discovery. He is living and well nine years and ten months later.

teen months after the onset, and is living and well six years and nine months later.

Case 6.—Twenty-six year-old male with fibrochondrosarcoma of coracoid process. He had excision and implantation of radium one month after the onset, and is living and well five years later.

Case 7.—Three year-old male with fibro-osteosarcoma of mandible. He had local excision, radium and post-operative radiation four months after the onset, and is living and well four years and six months later.

Case 8.—Forty-nine year-old female with chondrosarcoma of sternum. She had resection five years after the onset, and is living and well three years and three months later.

Only one case of Paget's disease was encountered in this series. This sarcoma

TABLE XIV.
EWING'S TUMOR

Age	Sex	Duration	Bone	Treatment	Result
18	M.	20 mos.	Scapula	Aspiration biopsy, X-ray therapy	Death 24 mos.
17	F.	2 wks.	Scapula	Aspiration biopsy, X-ray therapy	Death 6 mos.
36	M.	6 mos.	Scapula	Aspiration biopsy, X-ray therapy	Death 13 mos.
38	F.	12 mos.	Ischium	Local operation	Death (post-op.)

involved the ilium. The patient was living, with evidence of the disease in July, 1941.

EWING'S TUMOR

Four cases of this lesion were studied completely. Several cases originally diagnosed as Ewing's tumor proved to be osteogenic sarcoma or metastatic carcinoma. The most striking of these was a solitary metastasis of the ulna from a primary carcinoma of the kidney.

The first three patients died of metastasis and the fourth post-operatively. Response to early X-ray therapy resulted in reduction of the size of all the lesions and apparent bone regeneration. However, reactivation followed by pulmonary metastasis occurred rapidly (Table XIV).

Meyerding reported 114 cases with 21.2 per cent of five-year survivals, summarizing all methods of treatment; 37.5 per cent of those treated with radiation alone survived. Many of these lesions (61.4 per cent) were in the extremities. In none of our four cases was the lesion in an extremity and they could not be considered favorable. In two of the cases a twisting of the shoulder was responsible for the onset of the scapular lesion.

MULTIPLE MYELOMA

TABLE XV.
MULTIPLE MYELOMA

Age	Sex	Duration
49	M.	Living 4 years
41	F.	Death 6 mos.
74	M.	Death 11 mos.

In each case many bones were involved and the presence of Bence-Jones protein in the urine was demonstrated. The last two cases were proved by autopsy examinations, and the first by biopsy. All three cases were of the plasma cell variety. Radiation caused temporary regression in the first two cases, and was not used in the last case because the patient was in a terminal state when admitted to the hospital (Table XV). Meyerding reported 41 cases, with 3.6 per cent five-year survivals.

ADAMANTINOMA OF TIBIA

This extremely rare tumor was encountered in one case (47-year-old white male). The tumor in the lower one-third of the right tibia had been present two months on admission to the hospital (Fig. 1). A history of a direct blow to the leg two months prior to discovery of swelling of the leg was volunteered by the patient. Local biopsy and curettage of the lesion was performed. Ewing examined the specimens obtained and made a diagnosis of adamantinoma. He recommended amputation above the knee. This was performed nine days after the local operation at the level of the lower third of the femur. Chest films taken at this time for evidence of metastasis were negative. The patient returned home and was apparently well for about two months. He then developed a chronic cough and hoarseness, but refused to submit to any further surgical procedures. Pleural effusion developed, and a mass could be felt over the upper left chest and the base of the neck. The patient died twenty-two months after the onset. X-ray examination of the chest made shortly before death revealed multiple massive lesions interpreted as metastatic tumors. It is most unfortunate that an autopsy was not obtained. No cases of adamantinoma of the tibia in which pulmonary metastasis has occurred have been located in the medical literature.

LIPOSARCOMA OF BONE

One case of primary liposarcoma of the bone was encountered in a 17-year-

old colored male. A severe blow to the leg was sustained three months before admission. The lesion was osteolytic in character and an original diagnosis of osteomyelitis, both clinical and radiologic, led to the adoption of the Orr treatment. When fungation occurred shortly, amputation was performed at the mid-thigh, about six months after the onset. Death with metastasis to the lungs, kidney and to many other bones occurred eight months after the onset.

GIANT-CELL TUMOR OF BONE

This lesion was encountered 16 times. All patients were between 10 and 40 years of age (Table XVI).

TABLE XVI.
GIANT-CELL TUMOR

Bone Involved	No.
Maxilla	2
Mandible	2
Femur	4
Ulna	2
Fibula	2
Neck of Femur	1
Bones of Foot	3

Treatment was varied, depending somewhat on which department originally received the case (Table XVII).

TABLE XVII.
TREATMENT

Treatment	No.
X-ray only	5
X-ray and local operation	2
X-ray and excision	1
Local operation only	2
Excision only	6

The results of X-ray therapy were satisfactory in approximately one-half of the cases. Others are still having occasional reactivations and pain. Several subsequently submitted to excisions. One lesion, involving the astragalus, was regarded as probably malignant. Astragalectomy was performed and the patient is well seven years following this procedure.

Meyerding reported seven cases regarded as malignant giant-cell tumors, with 83.3 per cent five-year survivals.

During this same period, 25 cases of benign osteochondroma and chondroma, and 32 cases of malignant muscle and fascia sarcoma were listed as proved cases in the hospital records.

SUMMARY

An attempt was made to analyze, in a critical manner, a series of 53 cases of primary malignant bone tumors selected from a total number of 93 bone tumors in general that have been observed at the Jefferson Medical College Hospital during the past 20 years. This included 43 cases of osteogenic sarcoma, four of Ewing's tumor, three of multiple myeloma, one of adamantinoma (tibia with pulmonary metastasis), one of liposarcoma and one probably malignant giant cell tumor of the astragalus.

Certain points in the diagnosis and treatment, relative to mortality, of each group were stressed with special emphasis given to arteriography as being superior to and safer than biopsy. The value of radiation as a supplement to amputation at the earliest optimum time is discussed.

CONCLUSIONS

1. The history of trauma in the majority of the cases in this series, together with its definite relationship in a certain few, makes it seem to play some rôle in the genesis of bone tumors.

2. The danger of spreading a malignant bone tumor by diagnostic biopsy may be overcome by substituting arteriography. By this latter procedure, one can determine the exact limits of the le-

sion, distinguish the benign and the inflammatory from the malignant, as well as denote the stage of the malignancy.

3. When amputation is indicated, it should be performed at the earliest optimum time, rather than as soon as the diagnosis has been made. This view will probably undergo revision if and when arteriography is universally used in place of biopsy.

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SUMARIO

Se ha hecho un intento de analizar, de una manera detallada, una serie de 53 casos de tumores malignos primarios de los nuesos selecionados de un numero total de 93 casos de tumores oseos en general que han sido observados en Jefferson Medical College Hospital durante los ultimos veinte años. Esto incluyó 43 casos de sarcoma osteogenico, 4 tumores de Ewing, 3 mielomas multiples, 1 adamantioma (tibia con metastasis pulmonares), 1 liposarcoma y 1 probable tumor maligno de celulas gigantes de el astragalo.

Ciertos puntos en el diagnostico y tratamiento, relativos a la mortalidad, de cada grupo fueron estudiados dando especial enfasis a la arteriografia como mas segura y superior a la biopsia. El valor de las radiaciones como un suplemento de las amputaciones en el primer momento optimo es discutido.

RÉSUMÉ

L'auteur analyze d'une manière critique une série de 53 cas de tumeurs malignes primaires des os. Ce total fut choisi de quatre-vingt-treize cas étudiés au Jefferson Medical College during les dernières vingt années. Il est inclus dans cette série 43 cas de sarcome ostéogénique, 4 de tumeur Ewing, trois de myélomes multiples. Un cas d'adamantinome (tibia avec métastase pulmonaire), 1 liposarcoma et un cas de tumeur maligne de cellules géantes de l'astragale. L'auteur discute le diagnostic et le traitement de ces tumeurs. Il envisage l'arteriographie comme préférable à la biopsie. La valeur de la radiation comme supplément à l'amputation aussi tôt que possible est considérée.

Выводы

Серия 53-х случаев злокачественной опухоли кости, избранных из группы 93-х случаев опухоли кости, подверженных лечению в период последних 20-ти лет в Джефферсон Колледж Госпиталь, заключала в себе 43 случая остеогенной саркомы, 4 случая опухоли Екинг'а, 3 множественной маеломы, 1 адаментомы (большо-серцовой кости с легочными тазами), 1 случай липосаркомы и 1 случай злокачественной опухоли гигантских клеток таранной кости.

Оказалось, что артериография дала более точные показания, чем биопсия. Также подчеркивается как можно раннее облучение после ампутации.

Advances in Heart Surgery*

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THE operative treatment of the heart has a special position in surgery. When Rehn successfully sutured a heart wound for the first time 47 years ago, it was considered a decisive event in the development of surgical technic.

EXPERIENCES IN THE TREATMENT OF HEART WOUNDS

Operations on the heart must be performed under conditions which are unique in the organism. The continuous and powerful motion of the heart muscle prevents smooth and systematic operative performance. Speed and utmost concentration in every detail of manipulation are of importance.

According to various statistics the mortality of heart wounds surgically treated is about 50 per cent. My figures* are somewhat more favorable. Of seven patients operated on (one with a stab wound of the bulb of the pulmonary artery, which was not a heart wound in a restricted sense), five recovered; two patients died—one 16 days after operation of a purulent pericarditis and pleurisy, and the other 16 hours after operation. In this latter case there were two gunshot wounds. One of the bullets had left the body on the posterior wall of the right auricle, and since I was unable to find this spot, the patient died from hemorrhage following operation.

In considering the clinical symptomatology of heart wounds, it must be stressed especially that in about 40 per cent of all cases we do not find the well-known signs of progressive blood loss, but rather those of tamponade of the heart.

The period of time during which a critical tamponade of the heart develops may vary considerably. One generally overestimates the urgency of surgical intervention. It may take hours or even days until the strangling of the circulation within the heart has reached the danger point. This means that in most cases there is sufficient time to carefully perform a clinical and X-ray examination. The statement which may be found in most textbooks that perforating wounds of the heart may heal spontaneously is only of problematic value. Such a happy ending should not be expected, and there do not exist any clinical signs which warrant such a hope. It would be especially hazardous to expect a spontaneous cure in cases of definitely proved hemopericardium because of favorable values of pulse and blood pressure, for in almost every case of tamponade of the heart the onset of circulatory failure is quite sudden. Very often the so-called typical prodromal stage of arrhythmia of the pulse is absent.

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*Schweiz. Med. Woch. 67:861, 1937.

The surgical treatment of heart wounds has enabled us to collect some facts which are of interest in the physiopathology of the heart. Electrocardiographic studies on patients with sutured stab wounds of the heart have been made by Bates and Talley, Vega, Cossio, Fotheringham and Sabathie. The tracings show changes typical of myocardial infarction, though no branches of the coronary vessels had been ligated in these cases.

In three of my own cases the findings were similar, namely, a negative *P* wave and deeply negative *T* waves resembling a coronary *T* by beginning after a convex *S-T* segment. In only one case the lateral branch of the left coronary artery had been severed, making a ligation of the vessel necessary in addition to the suturing of the wound.

Even more interesting is the fact that a needle sticking in the heart can produce the same changes in the electrocardiogram.

A four and one-half-year-old child had a darning needle stuck in his heart. The needle had pierced the anterior and posterior wall of the right chamber and remained in this position for eight days. Its removal was somewhat difficult since its ends did not project beyond the ventricular wall.**

Here the experimental findings of Lian and Merklen have been confirmed on human beings. This seems to prove that even very small injuries, *e.g.*, pricks of a needle, are able to produce the same electrocardiographic changes independent of the place of myocardial lesion.

It may be added that in all three of the above mentioned cases the electrocardiogram was normal again after ten days, even in the case of the patient whose coronary artery had to be ligated.

Another patient upon whom I closed a perforating stab wound of the right ventricle was re-examined three years later. He showed a slight sinus arrhythmia with an otherwise normal electrocardiogram.*

**Deutsche Zeit. f. Chir. 245:506, 1935.

SURGICAL TREATMENT OF VALVULAR DISEASES

In the field of experimental research, much work has been devoted to intracardial operations intended to influence valvular lesions. Mechanical problems like those of a valvular stenosis essentially belong to the realm of surgery. In 1902, Brunton proposed to eliminate the stenosis by means of dilatation or incision, which would mean to transform the stenosis into an insufficiency. Brunton's idea was based on the clinical experience that the prognosis of an incompetence, as a rule, is better than that of a stenosis.

Two patients (Cutler and Sontlar) survived the operation. Both of them showed temporary improvement.

It seems that no further improvements have been made during the last ten years, and it is easily understood that internists and surgeons hesitate to recommend this dangerous procedure in cases of decompensation of the heart which, after all, even if the outcome is favorable, would only serve to transform one valvular lesion into another.

On account of this the attempts to influence valvular lesions surgically have been continued with less perilous indirect methods. So, the question whether artificial changes in the tension of the pericardium could be of any therapeutic value has been studied very thoroughly in animal experiments. Several years ago Pick subjected the results of these experiments to strong criticism. He came to the conclusion that the slitting of the pericardium, recommended by Felix in cases of mitral or tricuspid in-

*Schweiz. Med. Woch. No. 36,861, 1937.

sufficiency, is a double-edged weapon. By the removal of the pericardium, the already dilated right ventricle might very well be unburdened temporarily by further dilatation without the left ventricle being able to take up or to eject the increased amount of blood which now reaches it from the right heart (experiments by Wiggers, Roessler and Unna, Winiwarter). The fact that the left chamber does not dilate under these circumstances as well is easily explained by the difference in the thickness of the ventricular wall. As a result a dangerous congestion of the walls occurs which is the forerunner of acute circulatory failure. In cases of lesions of the aortic valve the conditions are the same. Thus the uselessness of pericardiectomy has already been proved by animal experiment. Furthermore, I have not been able to find any reports in the literature of operations on human beings. It, therefore, would seem that no successful attempt has as yet been made.

Felix has also performed experiments to influence aortic stenosis and arterial hypertension by increasing pericardial counter-pressure. The surgical procedure consisted in tightening of the pericardium and in phrenicotomy. The tightening of the pericardium might well temporarily increase its protective function—the safeguarding of the ventricles against overstretching. But it seems that even Felix himself doubts whether this procedure is of any practical importance. It would be an equally unfounded assumption to presume that phrenicotomy, this surgical Jack of all trades, causes a rise of the pressure which is exerted on the heart from outside. We know from experience that the intrapleural pressure does not change after phrenicotomy. In experimental arterial hypertension, 80 per cent of the animals exhibit a dilatation of the heart, while only 20 to 25 per cent show this dilatation if a phrenicotomy has been performed simultaneously with the production of high blood pressure. This fact, however, can hardly be explained by a decrease of the traction of the lung or, in other words, by an increase of the external pressure which, as we have said, does not occur.

We are, therefore, forced to the conclusion that the treatment of valvular lesions by operations inside and outside of the heart neither produces unequivocal success nor does it show any promise for the future.

OPERATIVE TREATMENT OF MASSIVE PULMONARY EMBOLISM

Another surgical intervention, namely, the opening up of the intrapericardial section of the pulmonary artery for the removal of massive pulmonary embolism, can be considered nowadays less of a technical than a clinical problem. I need not dwell upon the ingenious idea of Trendelenburg and its technical aspects.

After the first successful case of Kirschner, the lives of eight more patients were saved through the skill of Meyer and Nystroem and Crawford. Each had operated successfully upon two more patients and this operative procedure gained popularity. But today the enthusiasm has ebbed. In 1932, Eichelter reported a review of 160 cases from the literature, of which only 9 survived. The actual number of failures might even be far greater. Even if the mortality rate were more than 90 per cent, we could not object to this treatment if we could be sure that only lost cases would be operated upon. The first great difficulty is encountered in the prognosis of massive embolism. The second difficulty concerns the diagnosis, though we shall not discuss in detail the numerous fallacies to which even the

very experienced diagnostician is subjected.

The indication for Trendelenburg's operation in itself leads to a vicious circle. If we restrict the operation to patients in the terminal stages then success will be very rare indeed and more or less the result of mere chance. If, on the other hand, we operate prior to this final stage, we have to consider that now and then a patient who might have recovered spontaneously may lose his life by operation. We cannot entirely reject the opinion of some surgeons who claim that more patients have died on account of Trendelenburg's operation than have been saved through it. We, therefore, feel that a policy of waiting until the last moment would be best from the clinician's point of view.

This critical way of looking at the matter must not be misunderstood. In such a situation the surgeon will be guided by his conscience and his feeling of responsibility. The dreadful event of pulmonary embolism weighs especially heavy on the mind of the surgeon who is far more of a direct tool of therapy than the medical man. His wish to avert this doom by early operative measures is easily understood. Anyone who has often been in such a state of conflicting emotions will not confuse criticism with blame.

THE SURGICAL TREATMENT OF CORONARY SCLEROSIS

Lately, in cases of coronary sclerosis, attempts have been made to improve the blood supply of the heart muscle by producing highly vascularized adhesions. The spontaneous formation of collaterals in disturbances of the nutrition of the heart seems to occur only in a very limited degree. In the case of the pericardium it is probably explained by the scarcity of the blood vessels. Not much was to be expected, therefore, from the artificial production of an adhesive pericarditis for the development of new arterial routes of supply.

In numerous animal experiments, Beck, Tichy and Moritz fastened pedunculated lobes of muscle of the anterior thoracic wall, as well as omental flaps which had been passed through the diaphragm to the anterior wall of the left and right ventricle. In that way an improved blood supply to the endangered myocardium was to be obtained and the formation of anastomotic routes between the right and left coronary artery was to be facilitated. The results of the animal experiments were encouraging; while the fatality rate of right coronary ligation was 70 per cent in normal animals, it was 33 per cent if the above described operation had been performed several months previously.

Beck, after some hesitation, therefore, decided to employ the method of a pedunculated muscle graft in patients suffering from severe coronary sclerosis. Among 11 operations there were 5 cases of postoperative death and 4 remarkable improvements.

O'Shaughnessy also accepted the idea of omentopexy and likewise studied it experimentally. He arrived at similar conclusions as Beck, Tichy and Moritz. His results are remarkable. In six patients on whom he performed the cardio-omentopexy, two died of complications which had no direct connection with the operation. One patient died seven days postoperatively of a duodenal hemorrhage, the other three months postoperatively of uremia. In three case the clinical result was quite satisfactory.

A third series of experiments was made by Lezius. He produced adhesions between the heart and the left lower lobe. After a few weeks he succeeded in filling the coronary vessels by means of injecting the vessels of the lung.

The results of Beck's operation are not encouraging. He questions whether this operation can have any further development.

The omentopexy undoubtedly brings about a better vascularization. It is astonishing that the opening of three body cavities was well tolerated by O'Shaughnessy's patients, some of them being elderly and very ill.

Lezius' method of procedure requires further proof. The question of the nature of the new blood supply has yet to be cleared up. Only those vascular connections which originate in the territory of the bronchial arteries and of the pulmonary veins are to be considered as being of full value.

It is a moot question, nevertheless, whether or not these operations are of value. O'Shaughnessy, who had a great deal of experience in this field, was looking forward to still greater successes to be brought about by the perfection of the technic (mechanical or chemical irritation of the epicardium aimed at developing new vessels on a larger scale). O'Shaughnessy's early death (he was killed in action in May, 1940, in Flanders) has prevented a further development of this method. Recently, there has been more disinclination to accept this type of treatment, but criticism, as a rule, was not based on personal clinical observations.

On the whole, it should be stated that the animal experiments are not utterly convincing and a small number of operations on human subjects does not permit a definite decision as to whether this treatment is superior to other methods.

THE OPERATIVE TREATMENT OF SEQUELÆ OF PERICARDITIS

In the operative treatment of the late consequences of pericarditis or mediastino-pericarditis we are on more solid ground. We need not discuss the anatomic and clinical pictures of the various gradations or the forms of localization of pericardial fibrosis. In order to proceed methodically, it is necessary to decide by clinical examination whether the heart action is impeded by pericardial adhesions or by fibrous construction. In the first group, in those cases where the fibrous mediastinum has firmly attached the heart to the anterior chest wall, or where the organ, as a consequence of pericardial shrinking, has been pulled to the right or left side, the indication for thoracolysis is given.

The area where the extrapleural rib resection is to be performed cannot be determined schematically. In some forms of shrinking fibrocavitarian pulmonary tuberculosis an extensive paravertebral thoracoplasty is the best method to free a heart which has been drawn aside by mediastinal fibrosis. In other cases in which the systolic retraction of the parasternal chest wall indicates the fixation of the heart to the interior wall of the chest, the typical precardial thoracolysis produces the desired result. A condition for a favorable final result is the absence of thick intrapericardial adhesions. If they are present—and, as a matter of fact, in many cases we find both mediastinal pericarditis and the fibrous internal pericarditis —only Delorms operation of "peeling of the heart" remains possible, a procedure whose dangers cannot be underestimated, and whose final results are, unfortunately not as favorable as would appear from the literature. It is easily understandable that one prefers to publish the good results. In most cases, at the time when the surgeon is consulted, the disturbance of the heart action cannot be explained by the hindrance to inflow alone. The growth of the connective tissue spreads to the heart muscle. The ability of the muscle to perform work,

therefore, becomes diminished. For technical reasons alone, it is, in most cases, necessary to limit the decortication to the anterior wall of the ventricles; but it is questionable whether the radical excision of the thick adhesions in this limited area would be appropriate at all.

In my own experience, which comprises five cases of decortication of the heart, we had only one completely successful result. This was the case of an 8-year-old child who had a thick fibrous pericardial coat due to a tuberculous pericarditis. The edema and the dyspnea disappeared; three years later at reexamination we saw a healthy well-developed boy. In two operations the patients benefitted only temporarily. They died three and five months later. The condition of the fourth patient remained unchanged; however, he did not die until nine months later. In the fifth case a serious operative accident occurred—the right ventricular wall was opened and the patient died three weeks later of a hemorrhage due to septic erosion of a vessel.

OPERATIVE FREEING OF THE HEART IN CASES OF EXTRAPERICARDIAL NARROWING OF THE CHEST CAVITY

The operative liberation of the heart brings about best results in cases of narrowing of the chest cavity by extrapericardial conditions. In most of these cases the heart is anatomically intact and after the removal of the compression it soon returns to normal activity. The development of intrathoracic surgery has fulfilled in this respect the fondest expectations.

The clinical signs and symptoms are extremely variable and by no means always correspond in their degree and extent to the intensity of the pressure. Paroxysmal tachycardia, angina pectoris, attacks of cardiac dyspnea, constant pressure in the heart region, pains on change of position, complaints corresponding to esophagospasm and cardiospasm are very common. For easily understandable reasons, pathologic conditions which encroach upon the heart from the right side are to be noticed at an early time and in a very marked degree.

Deformities of the thoracic cage influence the action of the heart both directly and indirectly as well as by dislocation of the sternum. In the individual case it is often impossible to decide whether the cardiac disorder is caused directly by pressure on the heart or indirectly by stiffening of the chest wall. The inevitable rigidity of the thorax impedes pulmonary circulation which, in turn, has an unfavorable influence on heart action. The operation must always consist in a loosening of the thoracic cage. Chondrotomy, which was recommended by Freund 80 years ago for the treatment of pulmonary emphysema, and later was discontinued, finds its justification here. In extreme degrees of pectus carinatum, chondrotomy is very effective. Sumultaneously with the beneficient facilitation of pulmonary circulation, the heart which, before had been compressed from both sides, is directly relieved by this operation.

Similar conditions prevail in cases of funnel chest. However, the mobilization of the thorax alone is not sufficient, for the depressed sternum has to be elevated as well. To attain this result, we have introduced an operation which elevates the sternal bone after it has been freed by permanent extension and fixes it in this improved position. Ombredanne, Garnier and Mathieu have confirmed the usefulness of this method on several patients. Their modification of the extension apparatus simplifies the treatment.

We find the greatest effect of extra pericardial pressure in acute conditions which put the whole mediastinal space under increased tension. The classical example of this is seen in mediastinal emphysema. In cases of lesions of the trachea and of the great bronchi, occasionally also as a consequence of an attempt at artificial pneumothorax (through causing a lesion of the lungs in obliteration of the pleural space), air enters the mediastinum. In a short time the whole pericardium is surrounded by an air cushion which stands under great pressure. The resulting circulatory disturbance corresponds in all respects to that of tamponade of the heart (as shown in experimental investigations by Jehn and Nissen). Both venæ cavæ are strangled in their extrapericardial course. The danger of immediate death here is no less than in a case of hemopericardium. An exact knowledge of the mechanical background of this very severe condition is more important as the life saving release of pressure on the heart can be obtained by means of simple operative intervention. An incision in the jugulum is sufficient to open a way for the escape of the air compressed in the mediastinum. The reports in the literature about the expediency of this decompression in mediastinal emphysema are unanimously favorable.

GASTROCARDIAL SYNDROME, EPIPHRENAL SYNDROME

There has been much discussion regarding the disturbances which have been summarized under the terms of gastrocardial and epiphrenal syndrome. Von Bergmann's opinion that the sudden dilatation of the parts of the esophagus or of the stomach which are in close vicinity to the heart could mechanically irritate the fibers of the vagus nerve and thus induce a constriction of the coronary arteries has been much disputed.

As a matter of fact, we fairly often find these anginal conditions in patients with cardiospasm and so-called hernia of the hiatus esophagus. Nevertheless, one gains the impression that these clinical conditions are coordinated spastic phenomena and are due to a nervous disturbance of central origin. This is borne out by the fact that the anginal symptoms persist in spite of therapeutic dilatation of the cardia or of the surgical establishment of an esophago-gastrostomy. In contrast to the "spastic" type, a peculiar form of an atonic type exists.

We encountered that type for the first time in a patient with megaesophagus who had arterial hypotension and an enormous dilatation of the esophagus, for which no explanation in an impediment in the cardia could be found. Even thick bougies got by without difficulty. Since this case was reported, we have seen two more patients with atony of heart and vessels associated with megaesophagus.

The knowledge of this condition is important from the surgical point of view. The weakness of the heart in these patients forbids any major operation. Furthermore, surgical treatment is of no use in this condition as here the dilatation of the esophagus is by no means the consequence of an organic or functional stenosis.

ORGANIC DISEASES OF THE HEART AND THYROIDECTOMY

Let us now say a few words about attempts to influence different sorts of organic heart disease by total thyroidectomy. It is the more futile to go into details about the theoretical bases of this operation as they have been greatly disputed until lately. Those authors (Blumgart and Levine) who, for the first time, advocated this operation believe that its

success is due to the decrease of oxygen consumption and to the reduction in the adrenalin output which follow the removal of the thyroid.

From the clinical point of view, we might call these effects of thyroidectomy a kind of compulsory rest cure. In a symptomatic treatment of this kind we could not expect an improvement of the organic changes to take place in the heart, nor has this claim been made by any of the authors. With regard to the general rules of operative indication, the following questions therefore arise.

(1) Is the objective relief brought about by this not quite harmless procedure so very definite that we should feel entitled to perform the operation?

(2) What are the late endocrine results of total thyroidectomy with regard to myxedema and postoperative tetany?

(3) Can we produce the result of total thyroidectomy by subtotal operation?

The answers are:

(1) The condition of patients operated upon for severe valvular lesions shows, as a rule, a dramatic improvement. Occasionally, a restoration of activty has been observed for a longer period of time. In angina pectoris there has been a great deal of controversy about the therapeutic results. The fatality rate of the operation has been unanimously reported to be from 6 to 8 per cent. Therefore, at least in angina pectoris, some very definite reservations with regard to the clinical results obtained have to be made.

(2) When the first reports about this therapy had been published, it appeared as though our theories about the relations between thyroid gland and myxedema would have to undergo a revision. Mandl reported in one of his papers that there were scarcely any or no signs of post-operative myxedema. This optimistic view is greatly in contrast to the findings of Berard on Cutler's patients, of whom 25 per cent exhibited severe signs of myxedema, while 50 per cent had mild signs of hypothyroidism and 10 per cent needed thyroid extract in spite of the absence of pronounced symptoms. The objection undoubtedly could be raised that in the majority of the cases there was no serious myxedema present, but even in mild cases where there were no other symptoms but a reduction of their intellectual capacity, the patients felt very uncomfortable. Quite a few gladly endured the recurrence of anginal attacks after thyroid extract if they could get rid of the myxedema.

The hypercholesterolemia, which very often accompanies myxedema, must further cause some misgivings whether in the last resort the arteriosclerotic vascular changes might not be increased by thyroidectomy.

The prevention of tetany in the first place depends on the precision with which the surgeon operates. One must admit, however, that it is often very difficult to avoid the extirpation or severe damage of the parathyroids during the performance of a total thyroidectomy. If less than all four parathyroid bodies have been removed, latent tetany may develop, which becomes manifest only if certain chemical conditions are present in the organism.

Total thyroidectomy, therefore, is anything but harmless in its endocrine consequences.

(3) The situation would be entirely different if by subtotal resection of the thyroid we could produce the same result as by total extirpation. Some cases have been reported in which the ligation of the thyroid arteries alone was successful (Horgan, Zak).

THE SURGICAL TREATMENT OF PATENT DUCTUS BOTALLI

The ligation of a patent ductus Botalli is an operative task which surely has stimulated the desire of every surgeon. Here restraint was not due to diagnostic difficulties or to technical considerations, but only to the fact that cardiologists used to remind us again and again that patients with a patent duct scarcely ever show serious clinical symptoms or, as a rule, were their lives in danger (likewise with septal defects). It further was said that these patients—about 30 per cent—who are apt to develop an endocarditis in the region of the abnormal opening, would retain this tendency of the endocardium even if an operation had been performed.

The first ligation of a patent duct by Gross in 1939 was followed by a great number of like operations. The time for the follow-up study had been altogether too short to ascertain whether we really are able to prevent an endocarditis by this procedure.

This operation has been performed even when endocarditis was present in the hope of curing the endocarditis. It stands to reason that under these circumstances the fatality rate of this operation, which otherwise presents only small danger, rises appreciably. As far as I have been able to survey the literature, the expected result—the cure of the endocarditis—has already been reached in a few cases. Whether the cure is permanent remains to be seen.

SUMMARY

The author mentions his experiences and results in different types of operations performed on the heart and pericardium. He also mentions the influence of total or subtotal thyroidectomy on cardiac affections. Much of the work mentioned belongs to the experimental stage as a matter of fact, surgery of the heart is still in the experimental stage.

SUMARIO

En este trabajo el autor hace mencion de sus experiencias y sus resultados en los distintos tipos de operaciones practicadas sobre el corazon y el pericardio asi como de la influencia que la tiroidectomia total o subtotal puede tener como tratamiento en las afecciones cardiacas. Gran parte de el trabajo reportado pertenece todavia al estado de experimentacion; ya que toda la cirugia de el corazon es aun mas una esperanza que una realidad.

RÉSUMÉ

L'auteur relate ses expériences et ses résultats obtenus par differents modes opératoire sur le coeur et sur le péricarde. Il mentionne aussi l'influence exercée par la thyroidectomie total ou sous-totale sur les cardiaques. Beaucoup de ce que l'auteur nous rapporte est encore an stade expérimentale. En vérité la chirurgie du coeur est encore à la période expérimentale.

Выводы

Автор сообщает его результаты разных операций на сердце и перикард, а также и влияние тотальной или субтотальной тироидектомии на сердечные заболивания. Все что было им переработанно представляет собою экспериментальную фазу. Хирургия сердца все еще находится в той же экспериментальной фазе.

The Surgical Treatment of Cancer of the Larynx*

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IT MUST be admitted that surgical treatment has the best statistical results to show in the treatment of cancer of the larynx, but there are cases in which the patient may be allowed to choose irradiation instead of surgery, or in which the laryngologist may even feel justified in advising irradiation.[1] In a paper to be published in the near future,[2] the criteria for the selection of treatment are considered at length, but in this paper I shall merely summarize the indications for surgery, and then outline the technics of the operations of laryngofissure and laryngectomy as we are doing them at the present time.

Fig. 1. Mirror appearance of lesions suitable for laryngofissure. (*A*) A lesion involving the middle third of the cord, for which the "clipping" operation would be used. (*B*) A lesion in the anterior commissure, which would require the use of the "anterior commissure" technic.

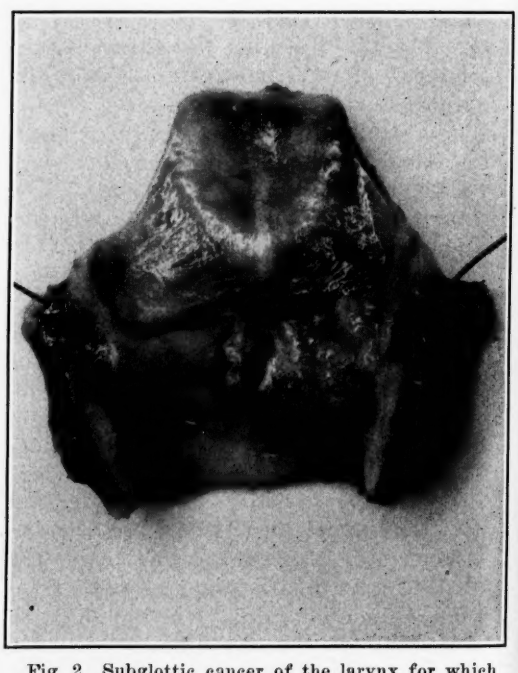

Fig. 2. Subglottic cancer of the larynx for which laryngectomy was done. Lesions of this kind cannot be satisfactorily extirpated by laryngofissure, and the results of irradiation are not good.

SURGICAL INDICATIONS

Lesions occupying the middle third of one vocal cord are suitable for the operation of laryngofissure by the "clipping" technic, regardless of histologic character or grading.

Lesions reaching the anterior commissure and even involving the opposite cord are amenable to extirpation by the laryngofissure route also, but in such cases the "anterior commissure" technic should be used. The histologic character may possibly influence us in deciding between the "clipping" operation and this one, or between the "anterior commissure" operation and total laryngectomy (Fig. 1).

Lesions in which the growth is cordal, but has reached the posterior end of the cord and produced impairment of motility, or has extended subglottically, call for total laryngectomy (Fig 2). In some of the cases in which the lesion is too extensive for extirpation by laryngofissure but motility is not impaired, irradiation may be tried instead of total laryngectomy.

Lesions involving the ventricles, the ventricular bands, or the base of the epi-

*Presented at the Third International Assembly of the International College of Surgeons held in Mexico City, August, 1941.

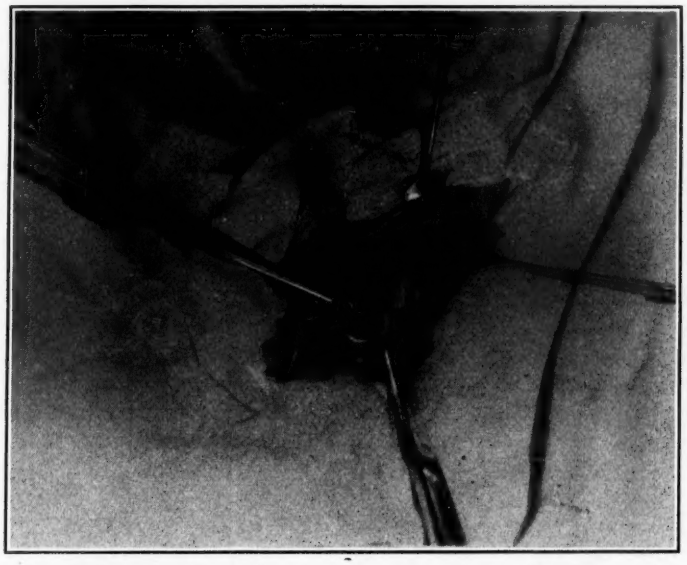

Fig. 3. The operation of laryngofissure. The cricothyroid membrane has been incised preliminary to the division of the thyroid cartilage. Cocaine, 10 per cent, or pontocaine, 2 per cent, is applied topically through this incision in order to anesthetize the interior of the larynx and the upper trachea. The next step would be the division of the thyroid cartilage by means of shears if the "clipping" technic is used, or by the circular saw if the "anterior commissure" technic is used.

glottis may be treated by either laryngectomy or irradiation.

In the case of lesions whose location and extent are such as to make them borderline cases for decision between laryngofissure and laryngectomy, the higher the grade the more radical should be the surgery. In other words, we might easily decide to do a laryngectomy instead of a laryngofissure in a case in which the lesion was considered of maximum extent for laryngofissure, and the histologic character was of Grade III, while if the latter were of Grade I or II, laryngofissure would be deemed justifiable.

Laryngectomy and partial pharyngectomy may be done in cases in which the lesion is "extrinsic," but the results in these cases are very unsatisfactory, and it is probable that irradiation will accomplish as much in arresting the growth and prolonging life. On the other hand, in some of the extensive cases, especially in those with cartilage involvement or perichondritis, there may be some advantage in removing the larynx preliminarily, and then following immediately with intensive irradiation.

Perhaps we should add, at this point, that while the presence of neck node metastasis contraindicates surgical intervention in the form of laryngofissure or total laryngectomy, it calls urgently for neck dissection and radon implantation, preceded by a full series of treatments by protracted fractional irradiation. If the irradiation is not immediately followed by this surgical procedure, the patient is certainly doomed.

TECHNIC OF LARYNGOFISSURE

The technic of laryngofissure[3, 4] used in the Temple University Clinic at the present time may be summarized as follows: Local anesthesia by infiltration with novocaine 1 per cent, intradermatically and subcutaneously along the mid-

line of the neck, supplemented by topical application of cocaine 10 per cent to the interior of the larynx and upper trachea on a swab introduced through an incision in the cricothyroid membrane. A straight vertical midline incision is made from just above the level of the thyroid notch to just below the level of the cricoid cartilage. If tracheotomy is to be done, the incision may be prolonged downward to the suprasternal notch. We do not do tracheotomy as a part of the operation, though it has been necessary occasionally in order to permit packing because of hemorrhage.

of the special cover, the cricothyroid membrane is incised, either transversely or vertically, for the topical application of cocaine to the interior of the larynx (Fig. 3).

In cases in which the lesion does not reach the anterior commissure, the "clipping" technic is used (Figs. 4 and 5), dividing the thyroid alæ exactly in the midline with shears, but in cases in which the lesion reaches the anterior commissure, the special technic for such cases first described by Chevalier Jackson[5] in 1922 is preferable. The essential feature of this technic is the division of

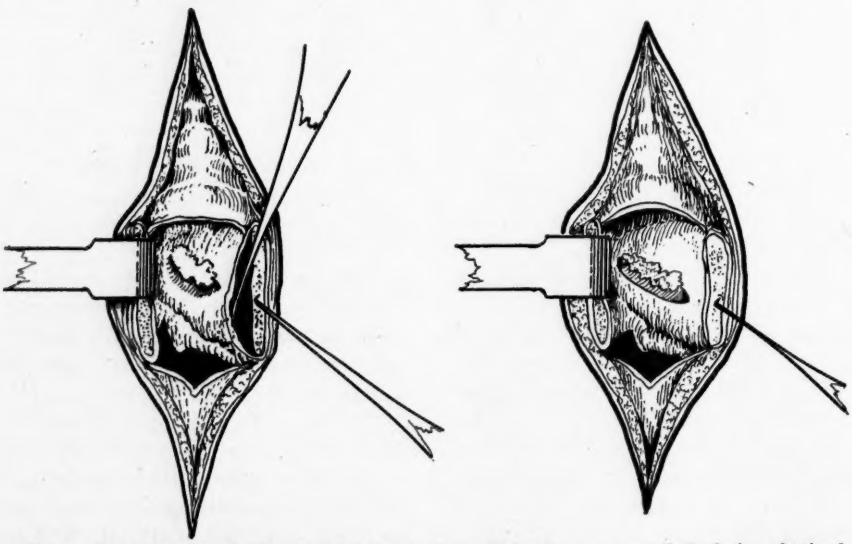

Fig. 4. Laryngofissure by the "clipping" technic. Note the exposure of the lesion obtained and the method of subperichondrial dissection used. (*From Jackson and Jackson: Cancer of the Larynx, W. B. Saunders Co.*)

As soon as the incision has been made, the cartilages exposed and hemostasis accomplished, a special cover consisting of a sheet with a slit in it is put in place, and the edges of the opening clipped to the skin margins of the wound. This cover helps to maintain scrupulous cleanliness and avoid skin contamination, particularly during the manipulation of the cartilages. After placement

the thyroid cartilage from the outside by means of an electrically driven circular saw, or a knife in the case of patients with a very soft cartilage. This incision does not go clear through the internal perichondrium, and in this way we avoid cutting through the tumor (Fig. 6). In a series of ninety-nine laryngofissures done at the Temple Clinic between 1930 and 1940, the clipping technic was used

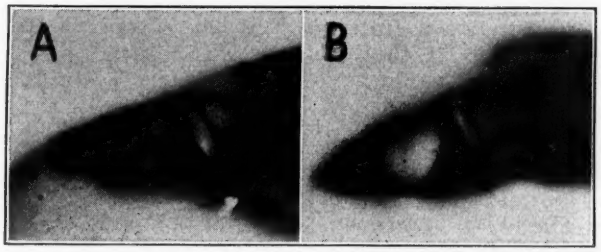

Fig. 5. Photographs showing the postoperative appearance in two cases in which the right vocal cord was removed by laryngofissure. Note that in both cases a fairly good "adventitious" cord has formed, with which the remaining normal cord can approximate.

in a little over one-half of the cases (54 per cent), and the "anterior commissure" technic in the remainder (44 per cent). Of the fifteen recurrences in this series, about one-half were in patients who had been operated upon by the one technic, and about one-half in patients operated upon by the other.

If the patient has been properly studied beforehand by direct as well as indirect laryngoscopy, one should have a very accurate idea of the location and extent of the lesion, but after the larynx is opened it should again be carefully examined, before the excision is begun. In the clipping operation this is simple, but in the anterior commissure operation it is a little more difficult. In the former, we can inspect the lesion before doing even the subperichondrial dissection, but in the anterior commissure cases it is necessary first to separate off the internal perichondrium on both sides and then to section vertically the less involved cord and ventricle so that it can be reflected in such a way as to permit good visualization of the entire interior of the larynx. This careful inspection permits one to decide upon the extent of excision necessary to give a safe margin of normal tissue around the growth.

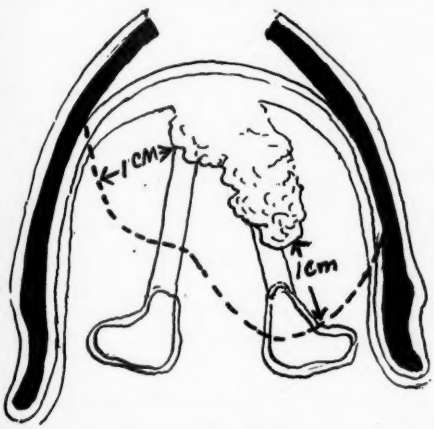

Fig. 6. Laryngofissure by the "anterior commissure" technic. After division of the thyroid cartilage from the outside, using the circular saw, the soft tissues are separated by subperichondrial dissection from the inner surfaces of the thyroid alæ; then the less involved cord is divided and reflected in such a way that a thorough inspection of the interior of the larynx is permitted before the completion of the excision of the tumor and a sufficiently wide margin of surrounding normal tissue. (*From Jackson and Jackson: Cancer of the Larynx, W. B. Saunders Co.*)

After subperichondrial dissection the tumor-bearing mass is excised with special curved scissors, generally including the tip of the vocal process of the arytenoid on the more involved side. In the case of strictly cordal growths, I feel that it is not necessary to include the ventricular band, but a portion of the ventricle should always be included.

Plain or iodoform gauze is tucked into the open larynx immediately after the excision, while the operative specimen is inspected, and most of the bleeding will generally stop with this alone. If a spurting vessel can be caught quickly with a hemostat, so much the better, because later it may retreat and be difficult to find. The larynx must be absolutely

dry before closing, or postoperative bleeding will surely occur. If the excision has been rather extensive, including one or both ventricular bands, the base of the epiglottis will be left without support and should be stitched forward as suggested by Gabriel Tucker. This will tend to prevent stenosis anteriorly.

The fascia and muscles are closed with buried sutures (alloy steel wire) and the skin with Michel clamps. No sutures are put through the perichondrium or cartilage and no drainage is used. A plain flat gauze dressing is applied; the first layer moistened with compound tincture of benzoin. The dressings are changed daily, and the clips removed on the third or fourth day.

The patient is kept sitting up, or rather with the head of the bed elevated. He is forbidden to talk and instructed to use pad and pencil to express himself. After a few hours he is given liquids and soft solids, being encouraged to sit up, lean slightly forward and take a good swallow rather than sipping, or sucking the liquid through a glass tube. In none of our cases has a feeding tube been necessary, but if an extensive excision is made, especially if the arytenoid is removed, it may be necessary to use a feeding tube. Opiates are contraindicated, and only the very mildest sedation is permissible. The wound is generally healed externally in four or five days, but the healing of the interior takes several weeks. Most patients are discharged from the hospital in from one week to ten days.

LARYNGECTOMY

In the past decade many operators have reported series of cases of cancer of the larynx treated by laryngectomy. Subperichondrial skeletonization as advised by Crowe and Broyles is an extreme manifestation of the present trend toward what we have called the "narrow-field" type of operation. The conservation of muscles and their overlapping in closure is another feature of this technic.

The essential features of the "narrow-field" technic we are now employing at the Temple University Clinic are the use of a simple midline incision, and skeletonization with a minimum of section or removal of muscles. The larynx may either be taken down from above or up from below. Tight closure of the pharynx is obtained by interrupted sutures of 000 chromic catgut, reinforced with a second row of 00 chromic catgut. The muscles are overlapped or "imbricated" to give maximum support to the pharynx.

This technic has been described in the book "Cancer of the Larynx" by Jackson and Jackson,[3] and more recently in a paper by Jackson and Norris,[6] but it seems appropriate at this time to review systematically the principal steps in the procedure as it has been carried out in a series of over forty consecutive cases without an operative death, in a period of about two and one-half years.

Elimination of oral sepsis has been regarded as the first step in the preparation of patients for operation. Every patient is referred to the dental department for examination, and in cases in which the dentist advises extractions, they are carried out, while in the other cases prophylaxis is administered. All patients are given a perborate mouth wash. If the patient is edentulous, so much the better.

In most cases avertin anesthesia is used, but a few operations have been done under local anesthesia alone. Dilaudid, gr. 1/32, has been found to be efficient as a supplementary sedative toward the latter part of the operation, but intravenous sodium pentothal has proved ideal as a supplementary anesthesia.

A simple midline incision is made. The ribbon muscles in most cases are left in, but occasionally the inner muscles (sterno-thyroid and thyro-hyoid) are removed with the larynx. Subperichondrial dissection is used whenever convenient, especially at the muscular attachments.

The hyoid bone, or at least its body, may be removed, and the pre-epiglottic tissues are excised along with the larynx if they are suspected of involvement by the neoplasm. Removal of the hyoid, or at least of its midportion, greatly facilitates removal of the pre-epiglottic space, and it also facilitates closure of the pharynx if the entire epiglottis is removed. On the other hand, in cases in which the lesion is cordal or subglottic, we see no advantage in removing the whole epiglottis or the hyoid. In such cases a transverse incision is made through the epiglottis in its mid-portion, and the tip left *in situ* (Fig. 7).

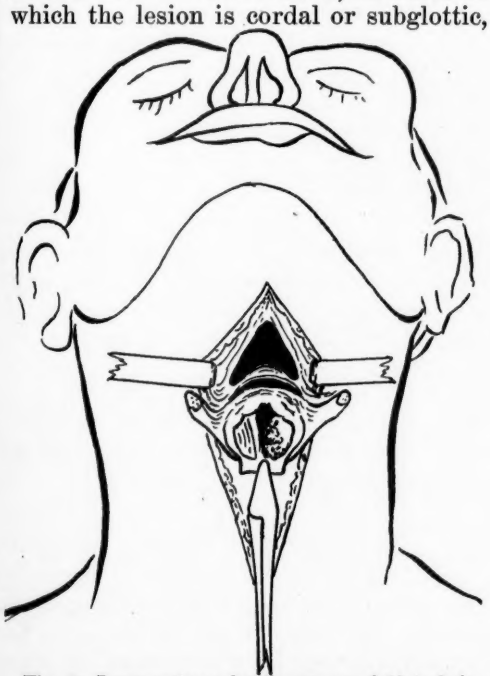

Fig. 7. Laryngectomy by the narrow field technic. A midline incision is used, and the ribbon muscles are not removed. The larynx may be taken down from above as shown here, or it may be taken up from below. Unless the hyoid bone is removed, the epiglottis is generally amputated through its middle third and the tip left *in situ*. This is not done in cases of supraglottic tumors. In such cases the entire epiglottis, pre-epiglottic space and hyoid bone are removed, as advocated by Bisi.[7]

Cricoid conservation is a debatable point, the advantage of retaining the cricoid or a portion of it being that it aids in maintenance of a good stoma, thus obviating the necessity of permanently wearing a cannula. Objections are that section of the cricoid causes annoying bleeding, and, of course, that one may be tempted to make the amputation too close to the lesion, thus increasing the risk of recurrence.

Closure of the pharynx is accomplished by very careful approximation of the edges of the mucous membrane with interrupted sutures of 000 or 00 chromic catgut, reinforced with a second row. The line of closure may be either transverse or vertical (preferably the former), or in some cases in the form of the letter "Y." The fibres of the inferior constrictor are united for additional support, and the ribbon muscles are overlapped or "imbricated," as suggested by Crowe and Broyles and as advocated also by Hayes Martin.

I have been very much interested in the new technic of amputation of the larynx and closure of the pharynx by means of a special clamp which makes it possible to close the pharynx without opening it, so to speak. This procedure and this instrument are described by Vasconcelos and Barretto[8] of São Paulo, Brasil.

Drainage is afforded by a single small glass elbow tube as a "sump," as suggested by Wayne Babcock. This small tube is inserted under the muscles, and the skin closed around it, taking care to establish a good bridge of skin between the "sump" and the tracheal stoma. (In some cases we have allowed an uncut bridge of skin to remain be-

tween the lower end of the incision and the stoma, the latter being made by a stab wound and cutting out of a circular piece of skin.) A small catheter is inserted into the glass tube, and the negative pressure is continuously applied to the catheter by means of a small "flea power" electric pump. This form of drainage is absolutely non-irritating and it accomplishes the removal of a large quantity of serum from the wound during the first day or two after operation, thus reducing tension in the wound and eliminating material which would afford a good culture medium for the growth of bacteria.

A feeding tube is inserted through the nose after closure. In some of the cases a short catheter is used, in others a regular long *Levin* tube. The feeding tube is left in for varying periods of time, usually until the second afebrile day, provided there is no leakage when sterile water is given by mouth. In our series of over forty cases, there were only seven in which a pharyngeal fistula developed, and these closed spontaneously in an average of about nine days. The periods of hospitalization varied from ten days to one month.

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SUMMARY

A recent analysis of the end-results in a series of over one hundred patients with cancer of the larynx treated during the period from 1930 to 1937, inclusive, showed that in 59 determinate cases in which laryngofissure was done, an 80 per cent five-year cure rate was obtained, while in 48 cases in which laryngectomy was done for an intrinsic lesion, 69 per cent obtained five-year cures. The nine patients with extrinsic lesions who were treated by laryngectomy all died. Therefore, we may say that of the one hundred and seven patients with intrinsic lesions who received surgical treatments by either laryngofissure or laryngectomy, 80 patients, or about 75 per cent, obtained at least a five-year cure. During the same period, thirty-four patients were treated by irradiation (deep X-ray therapy, protracted fractional technic), 22 of them intrinsic and 12 extrinsic, and in the intrinsic group a 59 per cent five-year cure rate was obtained. Incidentally, in the extrinsic group a 25 per cent five-year cure rate was obtained, whereas, as mentioned above, none of the extrinsic cases treated surgically survived.

SUMARIO

En este articulo el autor hace una sintesis de las indicaciones tratamiento quirurgico de las lesiones cancerosas de la laringe teniendo en cuenta su localizacion y su extension. Tambien hace un estudio de las diferentes tecnicas a emplear de acuerdo con la situacion de la lesion y de los resultados por el obtenidos en su experiencia.

RÉSUMÉ

L'auteur décrit le traitment chirurgical du carcinome du larynx. Il donne la technique à suivee dans les fissures du larynx et dans la laryngectomie. Le traitment post-operatoire aussi est considéré.

Выводы

Поводы к хирургическому лечению разных типов карциномы гортани описываются автором. Автор также описывает технику ларингофиссуры и ларингектомии и его результаты.

Rectal Conditions Associated with Third Degree Tears

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SO LITTLE consideration has been given to the effect of pelvic floor injuries on support and function of the rectum and the integrity of the sphincter ani, that it seems not unwise to review the picture of their interrelations. Such a review would hardly be worth while, unless we can cast off the old conception of prolapse and look upon the protrusions through both clefts of the pelvic floor as herniations, and to recognize that when the pelvic floor is injured in one triangle, there is almost invariably some lack of support in the other. Rectal sagging and herniation accompanying and resulting from gross and microscopic trauma of the pelvic floor have not received proper consideration.

Marked damage to rectal support may occur with first and second degree tears. Stretching at childbirth may even take place, so that much damage occurs to the supported and supporting structure without a tear of the first, second or third degree. A second degree tear may start a series of disabilities that may render the supports and the sphincter almost useless, and may be a large factor in the development of hemorrhoids, herniation of hemorrhoids and the rectum, and rectocele, which is a rectal herniation through the anterior cleft of the pelvic floor.

If we can keep in mind the developments from these lesser degree tears, we will be better prepared to understand all phases of the third degree tears, their extent, complications and repairs.

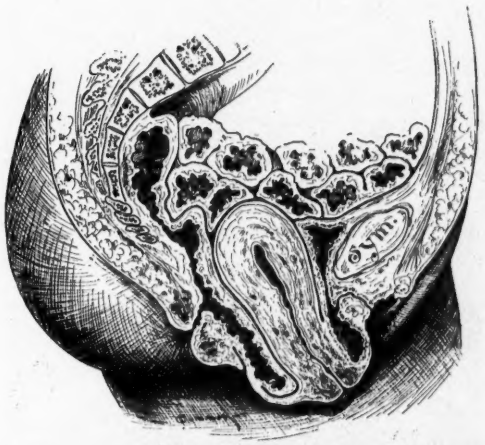

Fig. 1. Illustration showing pelvic structures coming far below the normal pelvic floor, which should run hammock-like from the symphysis to the coccyx. In this case the bladder, uterus, rectum and anterior and posterior cul-de-sac show very marked herniation.

A third degree tear may not have more or less evil influences from the standpoint of support than other pelvic floor injuries, but they add distressing features which are lacking in lesser degree tears. Their evil influence is greatly augmented by the occurrence which distinguishes them as third degree tears, namely, a tear through the sphincter ani muscle and, perhaps, up the rectum. This may be accompanied with much or little injury to the levator ani muscles, as the tear backward to the rectum may be mostly below the pelvic floor. It may separate the pelvic floor muscles in the median line or add to this side tears ex-

tending into the musculature of the pelvic floor, fairly well forward or well backward, separating the levators from the rectum on one or both sides. The tear, instead of merely going to the bowel wall, may extend up the bowel wall one or more inches, leaving the rectovaginal septum incomplete. This incompleteness may consist of a "V" shaped tear up the vagina, or a round or irregular fistula between the rectum and vagina, or both may be present, i.e., near or distant from the apex of the tear lies a fistula from a small probe size to that of half a dollar, which would be rather large, to that of a silver dollar, which would be unusual.

This now introduces new draw-backs, not encountered in the lesser degree tears.

Fig. 2. Illustrating a normal pelvic floor for support with the structures intact. The rectum, vagina and urethra are passing through the pelvic floor and in some cases of loose structure may furnish opportunity for herniation.

1. Loss of sphincter control is the outstanding feature.
2. (a) We have immediately more hemorrhage.
   (b) Fecal contamination of the wound.

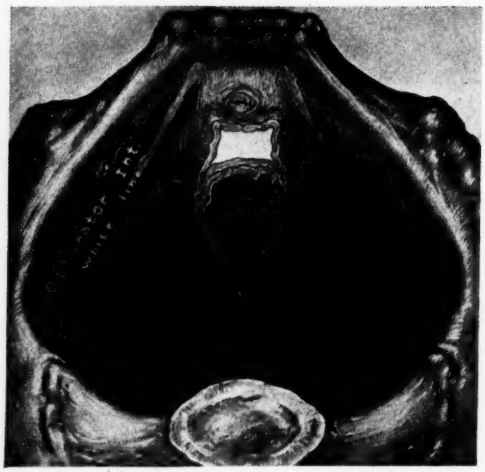

Fig. 3. The pelvic floor as seen from the inside, showing a complete tear back to the rectum with the rectum loosened from the levator ani supports. This shows the possibility of the rectum bulging forward into the vagina and herniating as is shown in Fig. 1.

   (c) Sepsis.
   (d) Seepage after operation.
   (e) Fistulæ.
   (f) Fecal contamination of the vagina.
   (g) Scars running from rectovaginal tears extending to the cervix, holding the cervix down to the perineal region.
   (h) Scars in the rectovaginal outlet, perhaps running up the rectum or into the ano-rectal region.
   (i) These complete tears vary from an almost clean cut tear into the rectum, to very extensive destruction of tissue, which may not be amenable to immediate repair.

There can be no doubt but that the best repair possible should be undertaken at the best possible time. If injuries which are fraught with so many unfavorable circumstances could in any way be prevented, it goes without saying such prevention should receive careful

consideration. Skillful guiding of the head through the birth canal has done much, but occasionally fails. Having seen many cases in which episiotomy has been employed to prevent disabling tears, I am far from being convinced

Fig. 4. Illustration showing the muscles and fascia in their proper relation to the bony pelvis with the visceral openings, the rectum, vagina and urethra through the pelvic floor, and the proper relations of the vagina, rectum, bladder and uterus lying above the pelvic floor.

that it solves the problem. Complete lacerations are very rare and may even be increased by a median incision. If these rare cases are to be prevented only by such universal use of a side incision of the levator ani muscle episiotomy, then we pay too high a price for this hoped for immunity, for the most damaged levator muscles that I have been called upon to repair, with the greatest deformity, are those that have had a side episiotomy. It is not merely a matter of skill, for the levator muscle, thin as it is, cut transversely across its fibre, does not offer an easy anatomic and functional repair, even in the hands of those who have championed the procedure, and is fraught with a high percentage of failure. A median incision, even when extended to the side of the rectum to avoid sphincter injury, offers opportunity for a more successful repair.

We come then to the repair of those tears under consideration. We do not contemplate the repair of a complete tear with the doubt expressed by some in cases which have had clean obstetrics. On the other hand, we must confess to having been called to repair some cases in which the open treatment seemed to

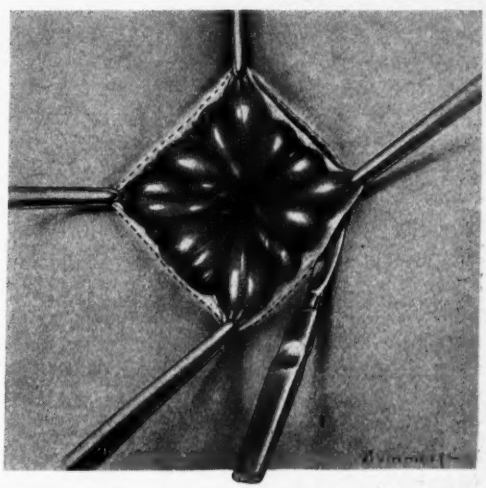

Fig. 5. Illustration showing a beginning herniation of the rectum and hemorrhoids because of dilated sphincter and pelvic floor opening. The bowel is severed from the skin along the dotted line, leaving the sphincter on the skin side and drawing the rectum down until one is past the herniating area.

have the advantage of greater safety. A case of obstetrics conducted by a man who followed a great master, and held his silkworm gut sutures in his teeth, and who dipped his forceps in a bowl of unboiled warm water so that the patient would not "catch a cold" by their contact, has not properly prepared a patient for a safe pelvic floor repair. On the other hand, we have been called 300 miles to repair the pelvic floor of a doctor's wife, who had been attended by two of the doctor's brothers and his father. They had followed the "let alone" policy so strictly that when I arrived, one week after confinement, the patient had a normal temperature and none of them knew whether or not she had a complete tear—she did, and it

healed by first intention. Immediate repair was done.

The muscles having attachment in the central tendon have largely lost attachment. There are two of them especially that must be considered—the levators and the sphincter ani. As they have pulled apart they have retracted under cover of the skin and the vagina and rectum and other muscles, fascias and fat. The vagina and rectum have fallen together so that there is not good exposure to find and bring together the essential structures for repair. Quite possibly the anterior rectal wall is torn and must be made complete. This is usually done by a line of rectal sutures, and is the method that gives these repairs their uncertainty, or the anterior rectal wall may be mobilized and brought down to make the anterior wall complete, making sutures in the rectum unnecessary. This method makes the repair of the complete tear almost as easy and nearly as certain as the repair of the incomplete tear.

The levators with the fascias must be uncovered and brought together in the median line. This bringing together of the levator ani should be carried far enough forward for pelvic support and give the proper lift to the bladder, but it should be carried backward far enough to get the levator ani at the antero-lateral quadrant of the rectum, take a bite of the rectum and then grasp the levator of the other side in the same relation to the rectum on that side. In this way we insure the pelvic floor support of the rectum, but what is of paramount importance, we enlist the levator muscles, the sphincter recti, in the important function of assisting the sphincter ani, which may have been partially crippled.

The sphincter must now be uncovered and brought around the mobilized and completed rectal wall and attached to the rectum and pelvic floor structures

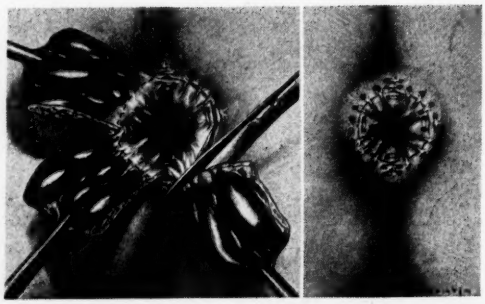

Fig. 6. *Left,* shows a moderate portion of bowel being amputated and the bowel sewed to the skin after the anterior and posterior reduction in size of the sphincter and levator ani muscle openings. *Right,* shows the closure completed with the bulging sphincter just at the outside of the closed incision. In extensive cases the narrowing of the outlet is much more extensive and more bowel is amputated.

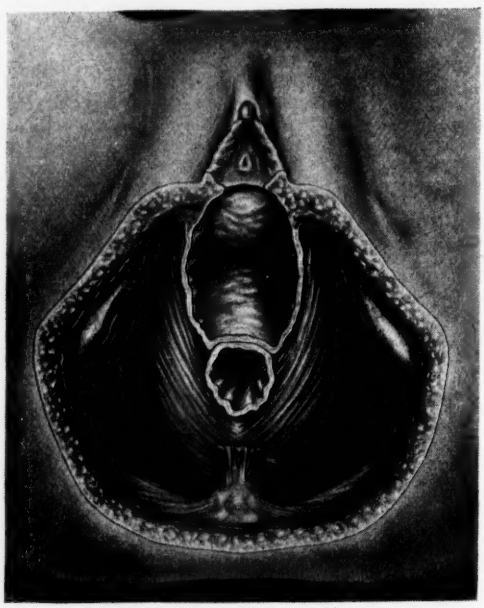

Fig. 7. Illustration showing the pelvic floor with all soft parts cut away and a complete tear with the muscles injured, so that the rectum is displaced backward toward the coccyx and the vagina follows, with extensive dilation and cystocele and rectocele falling into the opening. A repair here will necessitate separating the vaginal and rectal flap, bringing the right and left pelvic floor muscles together between the rectum and vagina. The posterior suture should grasp the left muscle well around to the side of the rectum, then a bite of the rectum five-eights of an inch above the sphincter, and the right levator muscle well around on the side so that the repaired muscle will snugly hug the rectum giving it its necessary support.

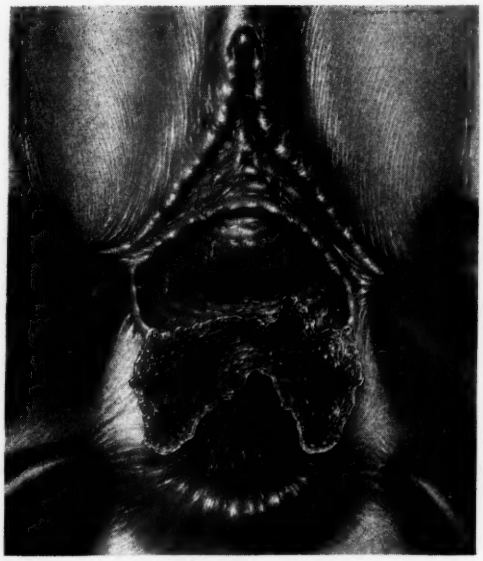

Fig. 8. Illustration showing an immediate complete tear of the pelvic floor. The rectal and vaginal wall have fallen too close together for the repair of the levator ani muscles without raising the flap. The rectum must be mobilized so that a purse-string suture can bring it down to the outlet. These preparations for repair are shown in Fig. 9.

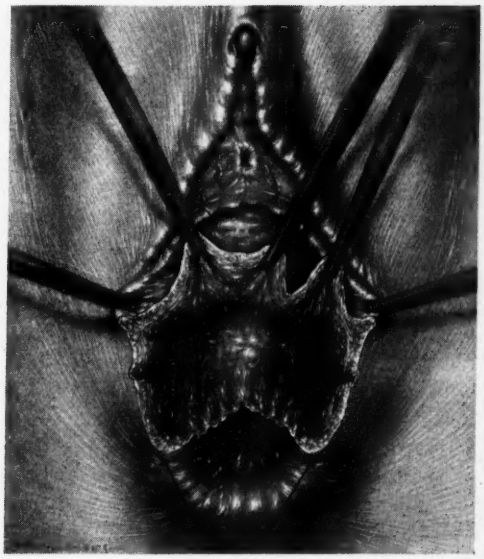

Fig. 9. Illustration showing an immediate repair of the complete tear involving the rectum. The anterior flap has been raised to uncover the levator ani muscles and give room to pick them up and bring them together. The rectum has been mobilized so that it can be brought down, making the anterior rectal wall complete. The ends of the sphincter are seen ready to be picked up and brought together high on the rectal wall so that the rectum or sphincter may not retract.

about five-eights of an inch above the lower bowel edge.

It was the custom at one time to put in skin sutures with a long sweeping needle, entering near the thigh on one side and coming out near the thigh on the other, the after treatment being to tie the patient's legs together so that undue stress would not be made on the sutures. The same needle suture combination still survives in many hospitals as a suitable skin and perineal working unit. Less than twenty-four hours ago, I had such a three and one-half inch curved sabre handed me as a suitable carrier of a silkworm gut suture. Gradually, however, it came to be thought a better closure of the wound to put in a line of sutures to close the vagina, a line of sutures to close the rectal wall, and then the big sweeping needle to close the perineal skin and perineal body. Gradually, it was discovered that the essential structure had retreated to a more distant jungle of tissue than this complication of sutures penetrated, and all that was obtained was a skin mucous membrane pelvic floor. Sooner or later, it was thought desirable to put in some buried catgut or, at one time, kangaroo tail tendon, before closing the skin, rectal and vaginal wound openings. Every move toward progress in pelvic floor surgery has tarried long on the doorstep of superficiality before registering for effectual service.

I will now repeat what those who have attended my clinics may recall having heard; that the surface tear that the oncoming head makes is not usually a good opening through which to repair injured structures. The injury to the

muscle may be at a distance from the skin or vaginal tear, or the muscles may retract from the apparent tear, and escape suturing. When we have raised the skin and vaginal flaps sufficiently to expose the injured muscles for picking up under sight, it is time to begin the placing of sutures. We have been told by good students of the Chamberlain system that at this stage the muscles, after labor and delivery, were "just a mass or disorganized jelly and impossible to identify," but while this was years ago I was able to tell him that after my artist had seen me puddling in that jelly, he was able to produce the pictures of organized structures which were then on exhibition, and that they were faithful representations. The "jelly" was merely the blood that one must encounter in a little greater quantity in a recent tear. Muscles do not "jell" by mere exposure or labor. If, however, an effort at repair does not expose and bring together the levator ani muscles, this part of obstetrics may as well be left to the midwife or the doctor who has had so many thousand cases and "never had a tear." Exposure and suturing of the levatores in the median line is an easy, sure and superficial operation, as compared with suturing a levator muscle that has had a deep oblique cut. For picking up these retracted structures, a strong curved needle that would fit the edge of half a dollar is desirable. The vaginal tear may be repaired with No. 2, 10 or 20-day catgut. The skin and superficial muscles may be brought together with silkwormgut or catgut. Preliminary preparation of the obstetric case should contemplate the necessity of this and many other obstetric maneuvers by good cleansing of the vagina and such repairs and handling of vagina should be followed by cleansing vaginal douches.

We come now to a consideration of complete tears that have gone past the

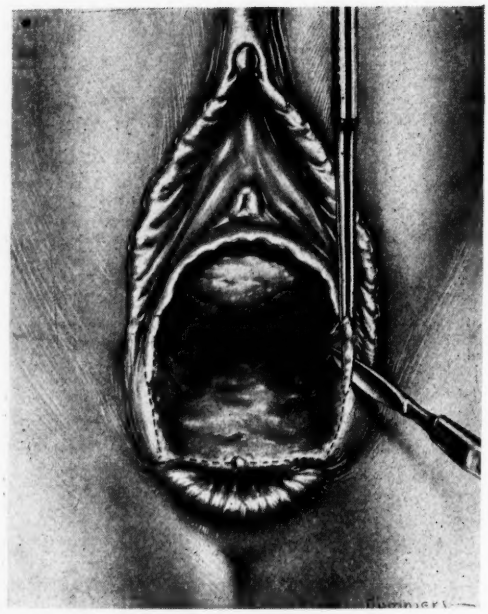

Fig. 10. Illustrating a complete tear involving the sphincter with the sphincter ends retracted to the sides of the rectum. The posterior half of the rectal opening represents the whole circumference of the rectum before the injury took place. The anterior portion of the rectum is represented by a line of scar tissue. The vagina and vaginal scar will be separated from the skin and perineum along the dotted line going back posteriorly to reach the sphincter ends. A cystocele is shown in front and a rectocele posteriorly. The vaginal flap will be raised as far forward as the dotted line and deep enough between the rectum and vagina to uncover the levator and muscles as shown in Fig. 12. Fig. 11 represents the same condition, except the incompleteness of the rectovaginal septum.

stage for immediate repair. Some have favored a time of ten days or two weeks past the time of delivery to avoid increased danger of puerperal infection by reason of an operation.

Nevertheless, numerous delayed and even neglected cases are seen, some of which have gone through succeeding childbirths. Some have been annoyed by constant lack of bowel control, some have almost constant vaginal contamination. There are cases in which scar tissue has so narrowed and fixed the anal outlet that solid feces pass with difficulty,

and liquid feces are not retained—cases in which the anal opening has lost its ability for contraction or expansion. There are cases in which a sphincter going around the posterior part of the bowel opening is so attached to scar tissue that the sphincter action is fairly well maintained, except in times of stress. Scars in the rectovaginal septum and extending down the vagina cause severe dyspareunia, and make defecation painful. Hemorrhoids and herniating rectal mucous membrane is not uncommon, and herniation of the entire rectal wall is seen. A considerable sized rectocele may develop, although many cases are seen without such development. Third degree tear implies a tear of the sphincter ani, but may not be accompanied by extensive pelvic floor tear. Cases are seen in which the anus is hugged nearer than normal to the pubic symphysis and there is very little loss of pelvic floor support. In some cases, instead of the sphincter tear being complete, with the torn ends being definitely retracted to the sides, the muscle fibres thin out as they run forward, leaving very little or nothing to complete the sphincter circle. In such cases the septum is not fixed by scar tissue and the rectal outlet may become quite dilated and flabby and subject to herniation of part or all of the wall of the bowel. The bowel in some cases is complete, but in others may have a "V" shaped defect in the bowel wall or fistula of small or large size, or both, to call for surgical measures to make the wall complete.

Ristine turned down a vaginal flap to lengthen the rectal wall and also furnish an apron to protect the wound from fecal contamination. Some try to save all septum present by trying to close the fistula above any tissue present below, but this is usually not worth while and these cases are the ones with numberless operations failing to close the opening. A complete anterior rectal wall and a much better pelvic floor can be achieved by cutting all tissue up to the fistula and then splitting the septum, starting at the upper fistula edge and bringing the posterior layer down to the outlet for a complete rectal wall. The same method is used in cases of tear up the rectum. It is in these cases in which one might think they needed extension that the Ristine extension would not be applicable.

In the majority of cases the incomplete bowel has been repaired with interrupted catgut sutures placed to tie in the rectum, but this furnishes op-

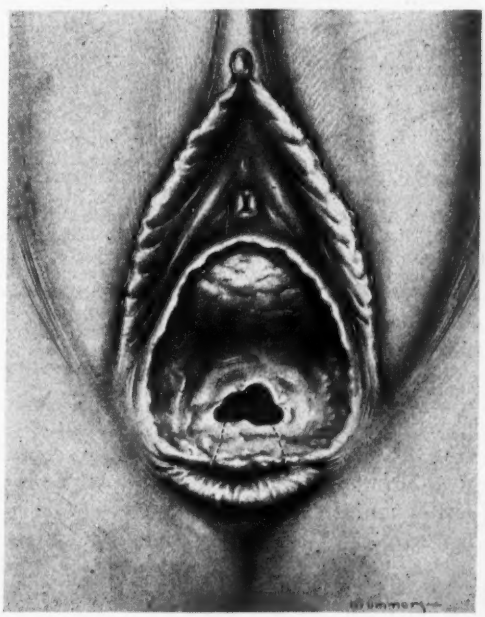

Fig. 11. This shows a complete tear with the levator ani muscle retracted to the sides ending at each side at the dimple shown. In addition to the complete tear a moderate sized rectovaginal fistula is seen which, in different sizes, is a common occurrence. The important point in repair is not to try to close this fistula, but to cut away the intervening tissue as shown by the dotted lines, leaving the upper edge of the fistula as the lower end of the rectovaginal septum to be split and brought down, the posterior portion, as the anterior rectal wall and the anterior flap as the posterior vaginal wall. The cystocele seen in front will have had a hernio-plastic repair previous to the perineal work.

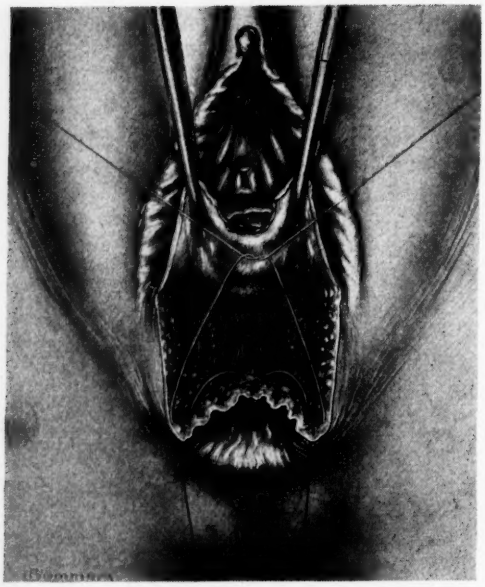

Fig. 12. Illustration showing the anterior flap raised to expose the levator ani muscles which have been sutured as we prefer to suture them. The anterior flap shows the former fistula opening, the posterior flap has been smoothed and purse-stringed. A No. 1 catgut suture has picked up the end of the sphincter and has taken a bite of the rectum and then has picked up the sphincter end on the opposite side and then is tied ready to draw the two ends of sphincter together, as the posterior flap is drawn down and the skin edges of the two sides drawn together, making the anterior rectal wall complete. Another suture in the levator ani muscles, in addition to the figure-of-eight suture is sometimes necessary.

portunity for seepage and contamination. I have always found the rectal wall capable of being moved down to the outlet, and in so doing the excess of rectal wall in a formed rectocele is disposed of to advantage. Stretching the wall longitudinally narrows the enlarged bowel transversely. In this matter the complete tear has the advantage over the incomplete one.

For years the Tait operation for complete tear was in vogue. This consisted of an "H" shaped incision, the vertical bars of the "H" running along the sides of the vagina to the labia, and backward at the sides of the rectum to pick up the ends of the sphincter, while the horizontal bar of the "H" represented the cut in the lower edge of the septum for the splitting of the septum. The superficiality of the operation is shown by Tait's description, which gives a depth of three-eights of an inch to this flap splitting. Again, like the Ristine operation, it would be applicable for only those cases in which the septum was flush with the perineal skin, or nearly so. But a worse objection confronts us. The flap splitting should continue to a depth that allows the picking up of the levator muscles and their fascias for the key operation of all pelvic floor rebuilding, for support, and the posterior sutures should attach the muscles to the rectum and hug the rectum as an aid to the sphincter, as in the immediate repair. As is readily seen, pelvic floor repair may be quite extensive, requiring the central pelvic floor repair in practically all cases, to which may be added numerous accessory operations as are needed. For this reason, the hernioplasty between the rectum and vagina is called here the key operation.

The removal of a protruding hemorrhoid may be combined with the repair of the anterior cleft and reconstruction of the rectal injury, but it is easily understood that an extensive hernioplasty would not be permissible, with all the additions to the key operation for pelvic floor repair, such as anterior vaginal repair, amputation of cervix, correction of displacement, or as a substitute for the two latter, a hysterectomy. It would scarcely be allowable to divide the work, leaving a herniation of the rectum protruding, so that if too much work presented for a complete operative attack, one would naturally have to choose the hernioplastic operation upon the rectum first, and add such other operations as were found necessary subsequently.

Rectovaginal reconstruction for third

degree tears and their complications does not preclude future childbirth, even through the modified normal route, but there are cases so beset with scars and complications that if a repair accomplished a result to permit pregnancy and the patient going to term, one could well avoid the risk of breaking down this repair work and urge the necessity of a cesarean section. One patient had two children by this method after a successful closure of a rectovaginal fistula with a fourteenth operation, after thirteen unsuccessful ones by many of Chicago's early surgeons.

The purpose of this paper has been to present some of the problems of this complicated condition which causes many a patient to lead a painful, distressing and sometimes a melancholic life, oftentimes in spite of several operations. A preliminary preparation should look toward rendering the bowel and vagina as free from infection as possible. Enemata and douches should be given; the skin and vagina should be thoroughly cleansed by soap and water scrubbing and antiseptic applications.

The problem of third degree tear is not alone one of sphincter control; there is also the problem of pelvic floor support, and pelvic and rectal herniation. There are also extensive lacerations with painful and distorting scars. There are injuries to the bowel, the repair of which calls for ingenuity and skill, and some gift at plastic work. We could all agree, perhaps, that an architect cannot make a plan of a beautiful building, or an artist paint a really fine painting, that their respective minds cannot visualize. In pelvic floor repair, every incision, every trimming, every stitch, every plastic effort, must bear some relation to the finished product.

In my intern days I was called upon to assist a man who had had a prominent career, but now he belonged to another

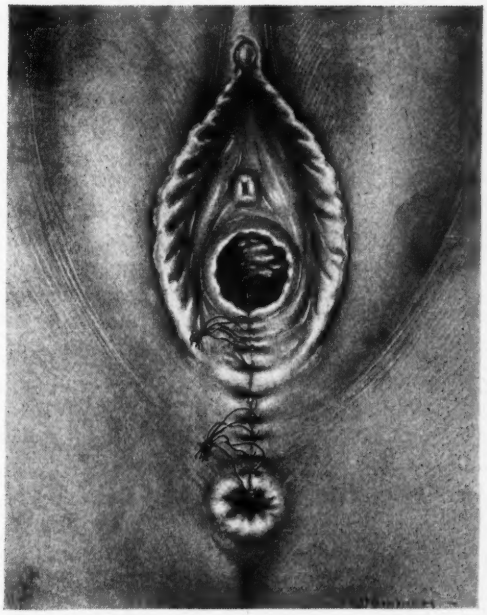

Fig. 13. Illustration showing the incomplete tear fully repaired.

age, and his pupils were of pinhole size. After working two hours to make these structures look not like they used to look but like something that would do, he stepped back, turned his head sideways, looked over his glasses, and remarked rather deliberately and wishfully: "Well, what in hell are we going to do next?" I thought he was something of a mind reader, for that was what I had been thinking for the last one and one-half hours. While his thought may have been the thought of others, I learned one of the answers to that question, which was to make plastic work a supporting structure. We must "next" go deeper than the skin or mucous membrane. That is a thing that surgery has been slow to grasp. Some of our clinics, and many of our textbooks still adhere to the superficial work of Emmet and Hegar, with some authors condemning a muscle building pelvic floor. We give due credit to Tait and

Emmet and Hegar for their pioneering, but if we would serve our day as they did theirs, we must deal with muscles as they dealt with skin and mucous membrane. One cannot reconstruct the pelvic floor by outlining butterflies in skin when one has not a clear picture of the anatomy of the butterfly or pelvic floor.

Again, the size of the vaginal or rectal canal coming through the pelvic floor is not determined by the vaginal structure or the rectal structure, but by the strength and stability of musculo-fascial structure around these canals and the attachment of the pelvic floor structure to them. These elastic tubes eventually become the size of the pelvic floor openings and they can herniate and exceed this size if they lose their attachments.

While the pelvic floor furnishes support, properly constructed, it makes an excellent assistant to the sphincter. If the work of the pelvic floor structures falls upon the sphincter, it not only fails to carry the load, but it fails as a sphincter. The repair of third degree tear is then not the superficial procedure that Tait and his followers thought it when they pointed out that with third degree tears cystocele, rectocele and general pelvic protrusion did not occur, for the reason that the forces were not damned by a sphincter. While this is not true, any argument for a superficial repair would be lost by the fact that if the sphincter were reconstructed, the principles would return to those governing injury to the pelvic floor with the sphincter intact.

The operation for third degree tear is deep surgery for pelvic floor repair and a superficial reconstruction of the sphincter to surround the rectum and attach to other muscles in the center of the pelvic floor.

In an incomplete rectal wall we would stress the avoidance of stitches to repair the incompleteness, but rather to move the rectal wall down for an intact anterior rectal wall, which at the same time does away with rectal redundancy in rectocele accompanying complete tear.

Repairs for complete tears do not call for sterilization or prevention of childbearing, but those who have had extensive tissue injury, great scarring, complicated rebuilding and inelastic tissues remaining, should not have the risk of vaginal delivery, but should have cesarean section. Marked rectal herniation that cannot be combined with vaginal repair should usually receive preliminary repair.

I am speaking of very complicated cases. All patients should receive as simple surgery as is consistent with thorough repair. Repair of complete tears should not await the end of childbearing; too much grief is involved therewith.

While it has not been the intent of this paper to deal at length with extensive rectal herniations, for the extreme rectal herniations are not usually combined with complete tears, yet it will be observed that all references to rectal protrusions employ the term herniation rather than prolapse. The former requires a hernioplastic operation on the pelvic floor in addition to amputation of the herniated gut. The term "prolapse" has for generations led to limitation of one's effort to the bowel alone, while in all herniations there is the hernia in the abdominal wall and the herniation of the abdominal structure into or through the hernial opening. Operations upon the herniated bowel should aim to preserve the sphincter. This is accomplished by the intra sphincterian hernioplastic operation upon the pelvic floor.

SUMMARY

The hernial nature of this disability is not lost sight of while dealing with rectal complications which accompany

complete tears of the perineum which involve the sphincter ani and, perhaps, the rectal wall. The immediate repair of third degree tears, stressing the point that the birth injury does not make a good opening through which to repair the muscle and rectal injuries, is discussed. The flaps must be raised to expose the injured muscles and the torn rectal wall must be mobilized to be brought down for a complete anterior rectal wall, instead of placing a line of suture in the rectal wall which leaves possibilities for rectal seepage. This makes the immediate repair of complete tear nearly as certain as the incomplete tear.

Rectovaginal fistula, which is common in complete tears, is dealt with by cutting away the isthmus of tissue between the exit and the fistula and start the splitting of the septum at the upper edge of the fistula. The septum must be split high enough to reach the levator ani muscles so that the pelvic floor may be repaired. The levator ani pillars should be made to hug the rectum snugly, in this way giving valuable aid to the sphincter ani, which is quite important if the sphincter ani is weakened. Stress is laid upon the interdependence of the intactness of the genital and alimentary tract. Herniation of piles and of the rectum are considered. A rectocele is really a herniation of the rectum through the anterior or vaginal cleft.

Repair of complete tears is compatible with future deliveries, but if tears have resulted in great loss of tissue or scars, cesarean section may be advisable.

SUMARIO

El trabajo precedente sigue la linea de enseñanza de los trabajos previos de el autor y de las presentaciones clinicas en relacion con "Protrusions Through the Pelvic Floor as Herniations" en lugar de "Prolapse."

La naturaleza herniaria de la incapacidad no es perdida de vista mientras tratamoes con complicaciones rectales que acompañan al desgarro completo del perine con desgarro del esfinter anal y quizas interesando la pared rectal. El trabajo se relaciona con el inmediato reparo del desgarro de tercer grado enfatizando el punto que las lesiones del parto no son una buena herida a traves de la cual reparar las lesiones musculares y del recto.

Los bordes se deben levantar para exponer los musculos lesionados y la pared lesionada; la pared lesionada del recto es movilizada para llevarla hacia abajo para una completa pared anterior rectal en lugar de tener una linea de sutura en la pared rectal que deja posibilidades para la penetracion de residuos rectales. Esto hace el inmediato reparto del desgarro completo casi tan seguro como el desgarro incompleto.

La fistula rectovaginal, la cual es corriente en el desgarro comple to, es tratada cortando el itsmo del tejido entre la salida y la fistula y comienza la separacion del septum en el borde superior de la fistula. El septum debe ser separado lo suficiente alto para alcanzar el musculo elevador del ano de modo que el suelo de l pelvis pueda ser separado y los pilares del elevador del ano se deben areoximar; el recto se encoge y en esta forma da gran ayuda al esfinter anal, lo cual es muy importante si el esfinter esta debilitado.

IMPORTANCIA

Se ha dado enfasis a la que tiene que el canal alimenticio y el canal genital esten intactos. Se estudian las hernias del recto y las hemorroides. Un rectocele es realmente una hernia del recto a expensas de la pared anterior vaginal. La reparacion de desgarros completos son compatibles con futuros partos; pero si el desgarro ha producido gran

perdida de tejido o cicatrices; la cesarea se debe aconsejar.

RÉSUMÉ

L'auteur, dans cette communication, continue l'enseignement qu'rl professe depuis longtemps et qui a de nombreux partisans, de sa methode de traiter les "Protrusions à travers le plancher pelvien comme des Hernies" au lieu de les envisager comme des cas de prolapsus.

Les resultats qu'obtient l'auteur ont été souvent démontrés. Tout en soignant les complications rectales qui accompagnent les ruptures complètes du perinéum de'chirent le sphincter de l'anus et parfois intéressant la paroi rectale, il ne faut pas perdre de vue la nature herniaire de l'infirmité. Barrett discute la reparation immédiate des dechirures du troisieme degré et démontre que ces déchirures n'offrent pas un bon accès pour la réparation des lésions rectales et musculaires. Les lambeaux doivent être élevés afin d'exposer les déchirures musculaires, et la paroi rectale doit être mobilisée et abaissée afin de reconstruire complètement la paroi rectale anterieure. De placer des sutures dans la paroi rectale encourt la possibilité de suintement rectal.

Ceci assure une réparation immédiate de la dèchirure complete aussi certaine que la réparation des ruptures incomplètes.

Les fistules recto-vagínales qu ón rencontre souvent dans les déchirures complètes exigent l'enlèvement de l'isthme de tissu entre l'exit et la fistule et la dédoublement du septum doít être commencé au sommet de la fistule. Il faut dedoubler les lambeaux suffisamment pour exposer le leveur de l'anus et ainsi reconstituer avec ce muscle des piliers enserrant le rectum et aidant le sphincter de l'anus, ce qui est surtout important quand le sphincter est affaibli. Il importe de ne pas ignorer l'inter-dépendance de l'intégrité des voies alimentaires et génito-urinaires. Dans la même contribution, l'auteur étudie la herniation des hémorrhoides et celle du rectum.

La rectocèle est une herniation du rectum a travers la fente vaginale. La reparation des dechirures complètes est compatible avec les accouchements futurs, mais síl y a en une grande perte de tissu on la formation excessive de tissu cicatricill, la section césarienne doit être considérée.

Выводы

Автор уже в предидущих сообщениях указывал, что так называемый "пролапс" на самом деле есть "Проталкивание через тазовой пол в виде грижи."

При осложениях со стороны прямой кишки, которые аккомпанируют разрывы промежности, разрушая сфинктор заднего прохода и даже стенки прямой кишки, также не следует упускать из биду грижевой характер недостатка. Описывая технику исправления родовой раны третьей стенки, автор указывает на то, что родовая рана сама по себе не представляет достаточное отверстие для репарации мускулов и раны прямой кишки. Нужно сделать лоскутки дла того, что-бы выставить на показ поврежденные мускулы, а раненая стена прямой кишки должна быть мобилизированна для шва, что выгоднее чем налагать шов кишки с возможностью просичивания из нее.

Автор лечит ректовагинальный свищ удалением перешейки между выходом и свищем и начинает сепарацию перегородки с верхней части свища. Перегородку нужно разрезать достоточно высоко для того, что-бы достичь мышцы леваторес ани и востановить тазный пол так, что-бы обнять крепко прямую кишку и оказать таким образом поддержку сфинктору задняго прохода. Подчеркивается зависимость цельности родового и алиментарного трактов. Выпад кишки на самом деле представляет собою грыжу прямой кишки через переднюю или вагинальную разщелину. Будущие роды возможны после операций на тотальные разрывы. При большой потере ткани нужно прибегать к кесарскому сечению.

Suture Repair of War Injuries to the Blood Vessels*

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THE introduction of the use of the ligature by Ambroise Paré in the sixteenth century revolutionized the former crude method for the control of hemorrhage. However, in the progress of surgery and of blood vessel surgery in particular, it has been realized that the ligature is not the best solution for the treatment of blood vessel injuries under all circumstances.

In 1888, Matas introduced the practice of suture in his technic for the repair of aneurysm.

During the first World War a number of surgeons of the Central Powers, chief among them von Haberer, stressed the importance of early suture of blood vessels in the treatment of war wounds; before the end of the war he had reported 200 cases of blood vessel injuries treated by this method with only one failure.

In 1913, I described my technic for arteriovenous anastomosis by suture before the session of the International Medical Association at London.

In October 1917, while overseas with the Presbyterian Hospital Unit with the B.E.F. in France, and assigned to a Casualty Clearing Station in the Ypres district, I found that ligature was the accepted method for treating blood vessel injuries. It was recognized, however, that ligature of the popliteal or posterior tibial artery was almost invariably followed by gangrene, but apparently no one in the British service had attempted suture in the treatment of such wounds at the Casualty Clearing station.

During my stay there I used the Carrel suture in five cases of laceration of the popliteal vessels; in all of these cases the continuity of the vessels was restored, pulsation in the tibial vessels followed, and gangrene was averted.

CASE 1.—G. McK., aged 28. Examination revealed a shell wound of the left popliteal space. The hamstring muscles were badly lacerated. The popliteal vessels were exposed and the artery and vein were found lacerated. Bleeding was controlled by flexible clamps, and a longitudinal opening measuring 5 mm. in both vessels was closed with continuous silk suture. A flap of muscle was fastened over the line of suture for protection. After excising all the lacerated muscle, Carrel-Dakin treatment of the wound was employed. Forty-eight hours after operation the foot was found warm, the dorsalis pedis artery was perceptible, and pulsations were normal. Eight days later the wounds were clean, pulse and temperature were normal; the dorsalis pedis and posterior tibial arteries were pul-

TABLE I.

ARTERIAL SUTURE COMPLICATED WITH OTHER INJURIES*

LOCATION	NO. OF CASES	LATERAL METHOD	MORTALITY	RECOVERY
Carotids	9			9
Subclavian	1			1
Axillary	1			1
Brachial	3		1	2
Femoral	4	1		4
Popliteal	4			4
Total	22	1	1	21

*Goodman, C., Surgery of the heart; blood vessels; thrombosis and embolism; and blood transfusion. Cinquieme Congress: Société Internationale de Chirurgie, July, 1920.

*Presented at the Seventh National Assembly of the International College of Surgeons, Denver, Colorado, July, 1942.

Fig. 1. End-to-end suture of carotid arteries. Specimen removed 20 days after operation. Cicatricial tissue firmly unites one vessel end to that of the other. One extremity is slightly everted and the other is implanted on it. The recess is so obliterated by connective issue that the intimal lining is completely regenerated. The suture line is hardly discernible on account of merging of the cicatrix with the sutured ends. Smooth muscle cells (Van Gieson's stain) grow into the cicatrix.

sating vigorously. On the ninth day the soldier was transferred to the Base Hospital.

CASE 11.—P. T., aged 21. Through-and-through shell wound of left thigh. A large oval opening 1¼ cm. in diameter was found in the popliteal artery just below Hunter's canal, with loss of an oval segment of the wall of the vessel. The artery was sutured and the calibre of the lumen was reduced to one-half its normal size. The tract of shell wound was excised, a branch of the femoral vein was ligated, and all the damaged muscle was excised. A flap of fascia lata was used to cover the line of suture in order to protect it from erosion by the Carrel-Dakin tubes. The circulation of the limb was very satisfactory and the patient was transferred to the Base Hospital. Seventeen days later the patient wrote that he had no pain and was progressing very nicely.

Subsequently, a few French surgeons employed early suture of blood vessel injuries in war wounds. In reviewing the treatment of blood vessel injuries at the Ambulance Chirurgiele under the command of Proust, the French surgeon Maurer stated that he successfully sutured the popliteal artery in two cases.

More recently, von Haberer again advocated suture as the best method of repair of blood vessel injuries. In a lecture delivered in 1940, Learmonth (Edinburgh) stated in his demonstration that suture is the ideal method of repairing wounds of blood vessels and restoring their continuity. He adds: "Hitherto it has had a limited application in military surgery."

On the basis of my experience in the first World War and in civil practice, I want to emphasize the fact that there is no reason why suture of blood vessels should not have a wider application in war surgery. Despite the extensive lac-

TABLE II.

ARTERIAL LIGATION COMPLICATED WITH OTHER INJURIES

LOCATION	NO. OF CASES	GANGRENE	MORTALITY	RECOVERY
Carotids	24		5	19
Subclavian	7		2	5
Axillary	3		2	1
Iliac	4	1		3
Femoral	5	1		4
Popliteal	1			1
Total	44	2	9	33

erations resulting from the missiles of war, repair of the arteries of the extremities can be advantageously undertaken in the advanced operating centers. Most of the wounded arrive at such centers within 24 hours, a time most favorable for repair of the damaged blood vessels. The wounds may be contaminated, but the infection has not yet become invasive. Elaborate instruments are not required for blood vessel suture. The simple equipment can easily be kept in readiness at an advanced operating center. Short, fine, straight, cambric needles (Kirby 16) and fine silk are employed for blood vessel suture; flexible blood vessel clamps are best for handling and closing off the injured vessels, but other devices may be used. The silk employed is sterilized in mineral oil. Threaded needles should be kept on hand ready for immediate use. A needle holder is hardly necessary. I have adopted an epilating forceps which has proved a convenient instrument for guiding the needle when working in a narrow field. The threaded silk sutures are wound loosely about a small square of cardboard to keep them from becoming snarled.

In the treatment of war wounds with injured blood vessels, débridement with removal of all damaged and necrotic tissue is first carried out before the injured vessel is exposed. If the vessel is deeply situated, it may be necessary and proper to ligate one or two of its branches in order to render the vessel more accessible. The vessel is then lifted to the surface on two pieces of tape, which may be used temporarily for closing off the circulation above and below the laceration. If flexible blood vessel clamps are not at hand, rubber bands or smooth forceps without teeth, tied with a ligature, may likewise be used. A small rubber bulb or piston syringe is then used to wash away the clot presented at the opening. Saline or Ringer's solution is

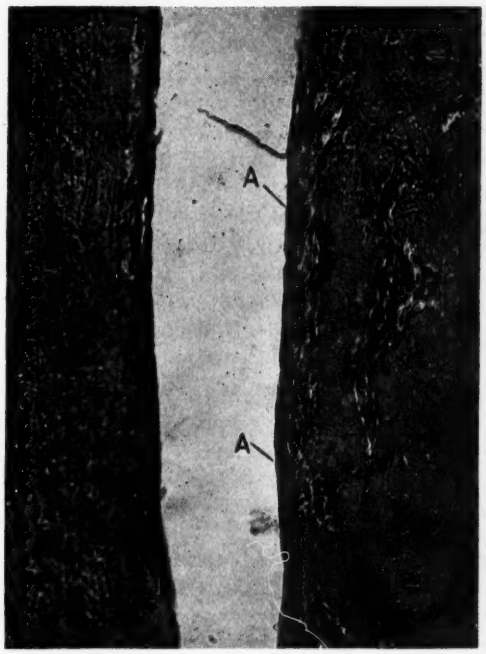

Fig. 2. Autotransplantation of vein into carotid arteries. Specimen removed two weeks after operation. Vessel partially occluded by coagulum. Surface of coagulum presents connective tissue cells, and apparently no accretion has taken place. Blood coagulum is covered by growing fibroblasts also infiltrating coagulum. Blood tends to form no further clot in the coagulum, which presents a smooth surface, as shown above.

used for this purpose. The adventitia or outer coat of the vessel is then trimmed away about the edges of the wound with the aid of small forceps and scissors. Adventitia contains considerable thrombokinase or ferment and should, therefore, not be included in the suture, as it may invite thrombosis. The segment between the temporary clamps or tape ligature is then perfused thoroughly with saline or Ringer's solution, followed by a few drops of liquid vaseline or mineral oil. The latter inhibits drying of the exposed vessel. The rent in the vessel is then closed with a simple over-hand suture. The suture having been completed, the temporary compression clamps or tapes are re-

moved, and gentle pressure is applied with a pledget of gauze dipped in mineral oil. Slight oozing will prevail for a few seconds. Should there be a spurt of blood because of the unevenness of the suture, an additional suture introduced and tied at the point of hemorrhage will effectively control the spurt. Walling off the operating field with pieces of black silk or other material, will not only maintain a field free from contamination, but will render the fine silk sutures discernible and the procedure easy.

TABLE III.

COMPARATIVE RESULTS OF SUTURE AND LIGATURE

Suture	No. of Cases	Recovery	Gangrene	Mortality
Aneurysms	236	226	7	3
Transplantation	12	11		
Other Injuries	20	19		1
Total	268	256*	7	4
Ligature				
Aneurysms	337	296**	30	11
Other Injuries	44	33	2	9
Total	381	329	32	20

* Complications: 1 secondary hemorrhage; 1 edema.
** Complications: 1 motor paralysis; 1 spastic paralysis; 1 hemiplegia; 1 disorder cervical plexus; 1 edema; 1 paralytic symptoms.

Where a larger artery has been completely severed, the ends are usually found curled up and retracted. After the wound is débrided and the ends of the severed artery exposed, the adventitia over the ends of the vessel is readily removed by pulling the adventitia over the end and snipping it off with one stroke of the scissors, leaving the media and intima exposed for the suture. The introduction of three guide sutures uniting the two severed ends will usually be followed by relaxation, and will overcome the tendency to retraction of the severed segments. The circular suture may then be completed without any appreciable difficulty.

The technic for the circular suture is identical with the Connel end-to-end intestinal anastomosis. The only difference is, instead of inverting the edges to favor a peritoneal adhesion, in the vascular suture, the edges should be slightly everted to take advantage of the adhesive properties of the endothelium.

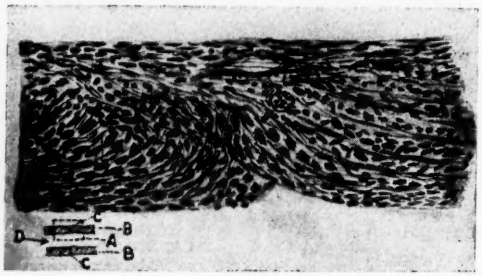

Fig. 3. End-to-end suture of carotid arteries. Specimen removed 9 days after operation. Suture ends separated by ½ mm. connective tissue on one side, and by 2 mm. on the other side. This connective tissue at some points is dense; at others loosely constructed. The intima regenerates everywhere. At one point one of the sutures lies within the vessel lumen, completely covered by connective tissue, with an endothelial surface. Where there is wide separation of the vessel ends, there is a considerable mass of relatively loose connective tissue on the surface, covered with intima. In the depths of the suture line at another point, definite osteoid structure exists. Distinct dilatation of the lumen is observed at the site of the suture line.

In the first World War, most wounds of the type requiring blood vessel repair were treated by Dakin's solution but with the modern use of sulfathiazole or sulfonalimide in the wounds, their postoperative care will be greatly simplified, and the danger of infection and sepsis minimized. The advantage of suture over ligature is the restoration of the circulation to the limb, obviating the dangers of gangrene and the tendency to gas gangrene infection. Ligation of the main vessel of an extremity, if not followed by gangrene, results almost invariably in neurovascular disturbances of a more or less serious character. Such late complications are furthermore avoided by suture. A sutured blood vessel does away with the potential danger of aneurysmal formation with its neurovascular complications. Even if

the suture is not entirely successful, and thrombosis ultimately occurs, occlusion takes place so slowly that there is ample time for an adequate collateral circulation to develop.

Recently, the use of heparin has been advocated for the prevention of thrombosis in blood vessel surgery. In my opinion, heparin is not of value in the severely wounded requiring blood vessel suture.

Thrombosis is prevented by two factors in the technic which I have described: (1) thorough washing out of all the clots, and (2) removal of the adventitia from the edges of the wound. The condition of a soldier more or less exsanguinated from loss of blood demands transfusion rather than the administration of heparin or any other anticoagulant.

When a portion or segment of an artery has been destroyed or completely carried away by the missile, so that the severed ends cannot be readily approximated, one may resort to the use of a Tuffier tube. This tube is introduced into the severed ends of the artery and the flanged ends secured from slipping out by a simple ligature. These paraffined tubes when removed at the end of several days, may be partially or completely filled with soft coagulum, but ample opportunity for the development of the collateral circulation will have been attained.

Under favorable circumstances, a segment of the saphenous vein can be interposed with the aid of a bipolar circular suture. This offers a satisfactory and permanent restoration of the continuity of the vessel.

What I have emphasized in regard to blood vessel repair in advanced operating stations of the Army, has been applied with equal force to immediate treatment of the injured among the civilian population.

SUMMARY

The fact that approximated endothelial surfaces heal over very rapidly makes the suturing of vessels a safe and desirable routine procedure. The rapidity is such that, in the absence of infection, (a) the suture material within the lumen does not lead to the formation of an occluding thrombus, and (b) the minute thrombi, formed within the chinks of the wall of the imperfectly sutured vessel, are covered over and prevented from growing by accretion.

The suturing of vessels leads to the prompt restoration of bloodflow through a part and helps to prevent dangerous infections which may be induced by the ligation of vessels with the corresponding shutting off of the circulation.

The excellent results in several hundred cases suggest the use of the following routine procedure:

(1) Isolation of the segments above and below the rent with tape, rubber bands, or flexible forceps.

(2) Irrigation of the lumen with sterile saline solution to remove all clots or foreign matter which might serve as foci for infection or thrombus formation.

(3) Removal of the adventitial coat from along the line of suture to facilitate needling and to prevent thrombokinase from reaching through to the intimal surface.

(4) Simple suture through the media and intima.

SUMARIO

El hecho de que las superficies endoteliales cuando se aproximan cicatrizan muy rapidamente hace la sutura de los vasos un proceder seguro y rutinario. La rapidez es tal, que en la ausencia de infeccion: (a) el material de sutura en el lumen no conduce a la formacion de un trombo oclusivo, y (b) el minimo trombo formado dentro de el agu jero de la pared de el vaso suturado incompletamente, esta cubierto e imposibilitado

para crecer por acumulacion. La sutura de los vasos lleva a la pronta restauracion de la circulacion de una parte y posiblemente la prevencion de el peligro de infeccion que, en ocasiones, puede ser producida por la ligadura de vasos con el correspondiente oclusion de la circulacion.

Los excelente resultados en varios cientos de casos justifica la siguiente adopcion como proceder de rutina en todos los casos quirurgicos:

(1) Aislamiento de el segmento superior e inferior al desgarro con e esparadrapo, banda de goma o un forcep flexible.

(2) Irrigacion de el lumen con solucion salina esteril para suprimir todos los coagulos o materias extranas que pueden servir como foco de infeccion o para formar trombo.

(3) Supresion de la capa adventicia a lo largo de la linea de sutura, para facilitar la costura y prevenir la tromboquinasa de alcanzar a traves la superficie intima.

(4) Simple sutura a traves de la media e intima.

RÉSUMÉ

Le fait que les surfaces endothéliales guérissent rapidement après rapprochement, nous enseigne que la suture des vaisseaux sanguins est un procédé désirable et bénin. La rapidité est telle, qu'en l'absence d'infection, le matériel de suture à l'intérieur du vaisseau n'entraîne pas la formation d'un thrombus occlusif, et les petits thrombi formés dans les fentes des vaisseaux malsuturés sont vite recouverts and n'augmentent pas par accretion.

La suture des vaisseaux entraîne un prompt rétablissement de la circulation de la region et aide à empêcher l'infection. L'infection est un des dangers de la ligature du vasseau lésé. La ligature peut supprimer la circulation dans la region vascularisee normalement par l'artère liée.

Les brillants résultats obtenus dans plusieurs centaines de cas justifient l'adoption, comme procéde de routine dans toutes les clinques chirurgicales, de la technique suivante.

1. Isolation des segments supérieur et inférieur à la de'chirure au moyen de rubans, de bandelettes elasques ou de forceps flexibles.

2. Irrigation de la lumiere du vaisseau avec de la solution saline afin d'enlever tous les caillots et tous les corps étrangers qui pourraient devenir ou des foyers d'infection ou abouter à la formation de thrombus.

3. Enlèvement de l'adventice autour de la ligne de suture (pour faciliter l'introduction des sutures et pour empêcher la thrombo-kinase de pénétrer la couche intimale.

4. Une suture simple intéressant les couches médiale et intime.

Выводы

Тот факт, что сближенныя ендотелиальныя поверхности заживают очень быстро, делает сшивку соссудов совершенно безопассной операцией. В отсуствии инфекции шовный материал в просвете не ведет к образованию тромбов.

Сшивка сосудов востановляет ток крови и способствует таким образом к предохранению инфекции, что может случиться после перевязки сосудов и потери кровообращения в данной части.

Автор получил превосходные результаты в сотнях случаев при наблюдении следующей процедуры:

1. Изолирование сегментов сверх и ниже перерыва посредством тесемьки (тейп) или мягких щипцов.

2. Промывание сосудочного просвета физиологическим раствором для очистки его от сгустков.

3. Удаление адвентиции в области шва (для более легкого укола иголкой и предохранения проникания тромбокиназа в интиму).

4. Обыкновенный шов медии и интима.

Hemorrhagic Problems in Child Surgery*

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NEW YORK, NEW YORK

"SURGERY has been made safe for the patient; we must now make the patient safe for surgery."

PRE-OPERATIVE PREVENTION OF SURGICAL BLEEDING

Lord Moynihan's dictum is especially applicable to the prevention of surgical hemorrhage. Extravascular loss of blood is a challenge that must be met promptly. It is, therefore, incumbent upon the surgeon to assess the operability of a child from the standpoint of postoperative hemorrhage in the presence of imaginary, latent or active hemorrhagic tendency. Each of these three types presents difficulty to the surgeon: (1) The child needlessly considered a "bleeder" invariably has some disturbance in the blood clotting or vascular mechanism; (2) the child with some latent hemorrhagic tendency will be readily recognized from the medical history, despite negative routine pre-operative tests, and (3) the child with active hemorrhagic disease is the universally poor risk.

Every child about to undergo a major or minor operation, whether he is regarded as a good or poor risk is, therefore, entitled to an evaluation of the functional status of all of the tissues of his body. This especially concerns blood clotting functions, because infants and children cannot withstand much trauma. A loss of 30 cc. of blood in an infant is equivalent to a loss of 500 cc. or more in an adult, and the consequences are more deep-seated.

Bleeding differs in mechanism and management, although the significance of hemorrhage is determined by the rate of bleeding, percentage of total blood volume involved, individual ability to replace blood constituents and interference with normal functions of the body. A large hemorrhage may be serious because of the child's inability to adjust himself to the sudden change, while small repeated hemorrhages may become grave because of their cumulative effect and failure of the body to recover from one episode before another occurs. Fortunately, nature has endowed the child with a tremendous reserve of hemopoietic tissue which provides adequately for such emergencies. Unlike other organs, this reserve is not in the nature of ready formed differentiated cells available for immediate function. They actually consist of an abundanee of quiescent mesenchymal elements in the form of reticular cells and hematogenic endothelium of the collapsed capillary bed in bone marrow. With sudden excessive demands for red cells there is sharp increase in normoblastic maturation necessitating replacement from erythroblastic and megaloblastic levels and consequent increase in blood-forming areas. But this development of new erythropoietic foci is paralleled by simultaneous increase in clotting components of hemopoietic tissues to be liberated into the circulation in the cause of arrest-

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ing hemorrhage. The compensatory mechanism is effective in the child with normal clotting mechanism, but ineffective in one with hemorrhagic disease. Clotting components will be liberated at the site of hemorrhage but they are powerless to induce clotting. That is why intravenous blood transfusion often constitutes a life-saving measure in providing the child's circulation with normal clotting substances. When the surgeon cannot possibly ligate all bleeding points he must of necessity depend upon the blood clotting mechanism of the body.

PRE-OPERATIVE DIAGNOSIS OF HEMORRHAGIC DISORDERS

Knowledge of the child's hemorrhagic status pre-operatively is equivalent to half the therapy necessary to prevent post-operative bleeding. To delay this until after operation is to encourage needless hemorrhage. Clinical indications will point to the need for determining the level of one or more of the clotting components of the blood. Ordinarily, the level of the prothrombin, platelets or thromboplastin will reveal the presence of an essential hemorrhagic disease. If these components are normal then the suspected hemorrhagic disease is of vascular origin and the tourniquet test is confirmative. From the surgical standpoint, there is no need to evaluate the fibrinogen content or calcium ion concentration of plasma, because neither is ever responsible for manifest surgical bleeding. Fibrinogen deficiency, even to the extent of 0.02 per cent in liver disorders, never causes bleeding. Congenital absence of fibrinogen in the blood is a medical curiosity, and acquired fibrinogenopenia due to metastatic or tuberculous destruction of bone marrow, never occurs in children. Calcium deficiency, to the extent of 1 mgm. per cent in serum, will induce tetany but no hemorrhage. We may, therefore, dispense with needless diagnostic determinations pre-operatively.

A. DIAGNOSIS OF PROTHROMBIN DEFICIENCY.

Prothrombin is present in the circulation to the extent of five times the normal requirements, yet deficiency may lead to fatal hemorrhage. Maintenance of the normal prothrombin level depends on the availability of vitamin K for its synthesis by the liver. The daily diet must provide 1 mgm. of vitamin K per day, for digestion of fat must be efficient to yield the antihemorrhagic factor. Digestive juices must contain an adequate supply of bile to permit absorption of the vitamin; the liver must be physiologically active to synthetise prothrombin from vitamin K. Absence or inadequacy of any of these requirements leads to prothrombin deficiency. Clinical methods are now available for measuring the prothrombin level of the blood. If the values are at about 25 per cent, bleeding does not occur, although loss of blood, surgical trauma and effects of anesthesia may reduce this supply of prothrombin to lower levels. It is essential in prothrombin determinations to consider 50 per cent levels critical for surgical procedures, although 25 per cent levels suffice for normal activity.

Nutritional Hypoprothrombinemia.— Hypoprothrombinemia of the newborn is a self-limited syndrome occurring in both sexes of all races within the first week of life. It is characterized by spontaneous hemorrhage, concealed or apparent, external or internal, in any tissue of the body, excluding that associated with birth trauma, neonatal accidents or other disease. Intestinal or umbilicial bleeding develops suddenly on the second or third day of life but rarely after the first week of life. Prolonged clotting time from the first mo-

ments after birth is simultaneous with only a slight increase in the bleeding time. The marked diminution in blood prothrombin is proportional to the prolonged clotting time.

Hypoprothrombinemia of childhood is a rare form of deficiency disease resulting from starvation, fat deprivation, inadequate absorption of excessive elimination of fat in soluble vitamin K. It is characterized by epistaxis, easy bruising or manifest hemorrhage, especially after surgical intervention. There is a moderate prolongation of clotting time, decreased prothrombin level and increased antithrombin level. Bleeding is precipitated only when sudden demands on the liver depress the prothrombin level below the critical level for hemorrhage, which is only 20 per cent of the normal.

Alimentary hypoprothrombinemia may develop from a variety of gastrointestinal disorders involving excessive loss of vitamin K by vomiting, diarrhea or by inadequate absorption from the intestinal tract. Bleeding may occur suddenly when depleted liver reserves bring the prothrombin to critical levels in digestive disorders, urinary disorders, jaundice or evidence of hepatic disease, i.e., intestinal obstruction, post-operative gastric retention, gastro-jejuno-colic, fistula, regional ileitis, chronic pancreatitis, intestinal polyposis, intestinal fistulas, celiac syndrome, sprue, ulcerative colitis and dysentery.

Cholemic hypoprothrombinemia is a complication of obstructive jaundice resulting from abnormalities of the biliary tract. The liver and spleen become enlarged as jaundice becomes intense after birth. Purpuric spots appear on the skin and hemorrhages occur from the nose, mouth, lungs, stomach, intestines and umbilicus. The blood prothrombin is greatly diminished, the clotting time prolonged, the clot non-retractible, the icteric index high, the direct van den Bergh positive, the stools clay colored, and the urine charged with bile pigment.

Hepatic hypoprothrombinemia is the consequence of severe parenchymatous liver injury in icterus gravis neonatorum, congenital anemia, fetal hydrops, erythroblastosis fetalis, chemical poisoning, acute yellow atrophy, cirrhosis of the liver and tumors of the liver. The extent of prothrombin deficiency becomes an inverse measure of residual hepatic function. Bleeding persists even with adequate vitamin K provision by virtue of its limited utilization within the liver.

B. DIAGNOSIS OF PLATELET DEFICIENCY.

Blood platelets are normally present to the extent of five times the child's requirements, yet fatal hemorrhage may be a result of their deficiency. The rate of production of platelets from megakaryocytes in bone marrow keeps pace with their rate of destruction in the spleen and reticuloendothelial system to the extent that the entire number in the circulation is replaced every four days. Platelets are liberated at the rate of 100,000 per cu.mm. of blood per day and up to ten times as fast after a splenectomy. Diminution in blood platelets may, therefore, be due to decreased production or increased destruction, although a combination of both factors is usually in operation. A platelet diminution increases the bleeding time, clot retraction and capillary fragility. The fewer the platelets in the blood, the longer the capillary lumina remain open, hence the bleeding time is prolonged. Since there are enough platelets to cause rapid clotting, the coagulation time is normal but the clot formed is hydrophilic and retracts poorly. Levels below 50,000 are critical for severe hemorrhage.

Essential thrombocytopenic purpura is characterized by spontaneous hemorrhages from the skin and mucous mem-

brane and occasionally into internal organs. There is marked diminution in blood platelets, increased bleeding time, decreased capillary resistance, normal clotting time and non-retractile clot. The disease is often congenital or hereditary, rare in infancy but common throughout childhood. There is always some difficulty in deciding whether the first attack is really the essential form of the disease, the thrombocytolic, due to platelet destruction, or to symptomatic form, in which the thrombocytopenia is due to diminished platelet production.

Septic thrombocytopenic purpura is the fatal form of the disease characterized by a sudden onset of digestive disturbances, chills, fever, rapid pulse, cyanosis, collapse, shock and hemorrhage into the skin and adrenal glands. While any severe infection, such as malignant diphtheria, typhoid fever, hemorrhagic variola, or cavernous tuberculosis, may produce thrombocytopenic hemorrhage, the Waterhouse-Friedrickson syndrome is the more prevalent. It is precipitated by bacteria striking healthy infants and progressing rapidly to fatal termination.

Symptomatic thrombocytopenic purpura is the consequence of many systemic disorders and often cannot be distinguished from the essential form of purpura. It occurs in the course of aplastic myelophthisic anemias, acute and chronic leukemias, Banti's and Gaucher's syndromes; acute and chronic infections, allergic and chemical disorders, nephritis and neoplasms. There is inhibition of platelet formation and destruction of megakaryocytes in the bone marrow evidenced by reduction in blood platelets and appearance of pathologic forms. In thrombocytopenia associated with splenomegalies, the spleen inhibits platelet formation in the marrow.

C. DIAGNOSIS OF THROMBOPLASTIN DEFICIENCY.—Thromboplastin is available in very limited amounts in the child's circulation. This active form is gradually liberated from platelets as well as from all tissues of the body in which thromboplastin occurs in considerable amounts. It is the rate of liberation of thromboplastin from blood platelets that determines its degree of effectiveness in blood clotting. Too slow a rate may lead to fatal hemorrhage. The immediate source of thromboplastin is available blood platelets, which may be normal in number and deficient in ability to release this substance. The rate of disintegration of blood platelets in 0.5 per cent citrate solution is about 15 per cent after the first hour, 30 per cent after the third hour, and 60 per cent after twenty-four hours. Platelets slower to disintegrate show marked morphologic variability, with changes in size, shape, structure and staining properties. Determination of the platelet lysis values is the index of platelet stability in the hereditary diseases—hemophilia, thrombasthenia and thrombopathy.

Hemophilia is characterized by a tendency to bleed protractedly from slight injuries, marked prolongation of the clotting time of the blood, exclusive occurrence in boys, and invariable transmission of the disease through the mother. Bleeding is articular rather than capillary. The clot formed in the damaged blood vessels is so soft that when it is washed away, hemorrhages start anew. What may appear to be hemophilia in a girl should be considered as thrombopathy or thrombasthenia. Markedly prolonged clotting time of venous blood is significant, but that of capillary blood fallacious because of admixture with tissue juices.

Hereditary thrombasthenia simulates thrombocytopenic purpura. It occurs in girls more often than in boys and is

transmitted as a dominant Mendelian trait from either parent. The blood platelets are normal in number but defective in structure. The bleeding time is prolonged and the clot retraction greatly retarded.

Constitutional thrombopathy is a rare composite of hemophilia and purpura. It occurs in both sexes of all races, especially in Nordics. The frequency in girls is so great that it has been called hemophilia of the female. The course is severe in girls but mild in boys. There is marked prolongation of the bleeding time, increased capillary fragility, and abundant though defective platelets.

D. DIAGNOSIS OF VASCULAR DEFICIENCIES. —The vascular surface is so tremendous that each cubic centimeter of blood in the capillaries has a surface exposure of over 5,000 square centimeters. The unfavorable aspect of this extensive vascular bed is its susceptibility to structural or functional changes which will permit escape of blood. From birth capillary resistance is manifest uniformly throughout the body to the extent of about 500 mm. of mercury, but this gradually diminishes during infancy until the adult level is attained, approximating about 150 mm. of mercury. Hemorrhagic disorders of vascular origin thus increase with age. When blood is shed, decreased capillary permeability and local clot formation arrest hemorrhage; but when there is injury, inflammation, allergy or malnutrition, vascular function becomes impaired and hemorrhage is inevitable. Under these circumstances normal blood is shed, since all clotting components are at satisfactory levels. The only means of demonstrating vascular deficiency is by clinical evaluation of the child's physical and functional status, correlated with some measure of capillary resistance. The tourniquet test is a qualitative index of vascular status, and the positive pressure test a quantitative measure adapted for children. When cutaneous purpuric spots are not present, they may be induced in susceptible children by either of these tests, as proof positive of latent or active vascular purpura.

Hereditary Purpuras. — Hereditary telangiectasis is an heredito-familial affection, transmitted to either sex as a dominant. It is characterized by localized dilatation of the veins, anywhere in the body, especially the nose, tongue and pharynx. The clotting components are always normal and capillaroscopic examination reveals excessive richness of surface capillaries, lengthening and tortuosity of the loops and convolutions of the terminal arches.

Hereditary epistaxis is a familial disorder transmitted as a dominant Mendellian trait to both sexes. The vascular defect in the nose may occasionally be corroborated by a positive tourniquet test or pathologic platelet formation. At times there is a sudden decrease in platelets during bleeding episodes and prompt return to normal.

Hereditary purpura simplex is a familial tendency developing spontaneous ecchymoses over the neck, trunk and extremities. It is predominant in girls, especially at the onset of menstruation, probably related to endocrine dysfunction. The capillary resistance test is positive, but all clotting components are normal.

Nutritional Purpuras. — Scurvy is readily recognized from the dietary deficiency, swelling of the palate, loosening of the teeth, bleeding of the gums, petechiæ over the molar prominences, pains in the legs, muscular hematomata, and loss of red cells in the urine. The tourniquet test is positive, but clotting components are normal.

Cachectic purpura is characterized by the pathology of nutritional dystrophy associated with avitaminosis A_1, C and P. The clinical features and hemorrhagic phenomena are determined by the nature of the avitaminosis. Deficiency of protein, carbohydrate, fat or minerals produce no hemorrhagic disorders but deficiency of vitamins alters vascular structure. The tourniquet test is positive and the clotting components at borderline levels but within the normal range.

Allergic purpuras are characterized by increased permeability of the capillary endothelium without any alteration of blood clotting constituents. Purpuric manifestations may occur in various forms, according to the anatomic distribution of the lesions. If associated with exudative skin eruptions, it is known as simple purpura; with visceral symptoms, as Henoch's purpura; with joint disturbances, as Schönlein's purpura. Whatever the type of vascular purpura, acute or chronic, local or widespread, the offending allergen may be obscured by the purpuric episode, but the child's allergic constitution and urticarial-hemorrhagic rash are pathognomonic.

Infectious Purpuras.—Infectious purpuras are characterized by embolic infiltration or toxic destruction of the vessel wall. The usual manifestations are vascular with positive tourniquet test and normal clotting components. Occasionally, there may be bone marrow injury with transient deficiency of platelets.

Purpura fulminans is a fatal form of purpura characterized by sudden onset, symmetrical purpura and gangrenous appearing lesions. The clotting components are normal, but capillary resistance is markedly diminished.

Majocchi's syndrome is characterized by small hemorrhages arranged in rings, especially on the upper extremities of children suffering from cardiovascular disease. The rash passes through three stages, telangiectatic, purpuric and pigmentary, as a result of toxic damage to blood vessel nerves.

Mechanic Purpuras.—Leukemic hemorrhages are the consequence of vascular infiltration throughout the body, although subsequent bone marrow involvement aggravates bleeding because of platelet deficiency.

Congestive splenomegaly is invariably associated with bleeding from the veins of the esophagus, stomach and intestines, as a result of chronic lesions of the portal vein.

Endotheliosis in subacute bacterial endocarditis is associated with bleeding in the periphery of the body, especially in the fingertips and toes due to microscopic emboli.

Heart disease induces epistaxis, purpuric lesions or congestive hemorrhages, especially in myocardial insufficiency.

Uremia may lead to terminal, cerebral, retinal and intestinal hemorrhages as a result of hypertension, although bleeding parallels the severity of capillary damage from infection rather than from the extent of nitrogenous retention.

TREATMENT OF PROTHROMBIN DEFICIENCIES

Nutritional Hypoprothrombinemia.—Surgical intervention in the newborn infant must heed the physiologic hypoprothrombinemia present during the first weeks of life. While the infant is born with a normal prothrombin level derived from the mother's blood, the value suddenly recedes to dangerously low figures in a day or two because of the lack of storage of vitamin K. This vitamin must be made available to prevent rapid depletion of blood prothrombin. Such a simple precaution lessens the chances of serious bleeding at the time of and after operations. In the case of manifest hem-

orrhagic diseases of the newborn, operations must be delayed until blood prothrombin is restored to normal levels.

Prophylactic measures administered to mothers before or during labor is preventive of neonatal hemorrhage in the newborn. The synthetic compound 2-methyl-1, 4-naphthoquinone should be given in 2 mg. doses daily for one week prior to delivery. When necessary, this preparation may be prepared for intravenous administration in the same dosage during labor, if previous newborns have suffered from hemorrhagic disease. Treatment of the infant either to prevent hemorrhagic disease during or after contemplated surgery, or to control the bleeding of manifest hemorrhagic disease pre-operatively is simple and effective. The water soluble compound 2-methyl-1, 4-naphthohydroquinone-3-sodium sulfonate is given intramuscularly immediately after birth in a single 3 mg. dose.

In older children with hypoprothrombinemia of dietary origin, oral administration of naturally occurring concentrate of vitamin K will suffice to bring the plasma prothrombin to normal levels. The fat-soluble vitamin must, of course, be offered with bile salts in order to insure completely effective absorption. If oral therapy is not well borne, intramuscular injection of crude concentrates of vitamin K may be used, although synthetic parenteral preparations are preferred. The most desirable preparation is water soluble vitamin K_5 administered orally with the bile salts from 5 to 25 mg. pre-operatively.

Alimentary Hypoprothrombinemia.— Hemorrhage preceding or following surgical procedures of the gastro-intestinal tract may be due to prothrombin deficiency, the common basis for failure of adequate absorption of the fat-soluble vitamin from the intestinal mucosa. It is induced by insufficient nutrient intake, inadequate bile, excessive loss by vomiting, diarrhea or pre-operative procedures. Even gastric lavage or intestinal drainage essential in post-operative management, tend to deplete vitamin K. Whether the alimentary basis for hypoprothrombinemia is single or multiple, normal levels may be restored promptly by vitamin K concentrates. Even small amounts of vitamin K concentrate introduced through an enteric stoma may be effective. Since deficient absorption is the determining factor in this group of prothrombin deficiency, it is best to resort to pre-operative parenteral therapy using water soluble naphthoquinone, as previously indicated.

Cholemic Hypoprothrombinemia.— The first objective in treating the jaundiced child is restoration of biliary flow and protection of the liver parenchyma. Some cases of jaundice show normal prothrombin clotting time, some prolonged prothrombin clotting time without manifest bleeding and others a prolonged prothrombin time and active bleeding. The child whose prothrombin time is normal requires prophylactic treatment with vitamin K concentrate and bile salts several days before surgery is initiated. The child whose prothrombin time is prolonged requires similar therapy preoperatively to prevent hemorrhagic episodes after operation. A gram of the vitamin K concentrate and 2 gm. of water soluble bile salts are dispersed in warm water and administered slowly by the drip method. The child who shows hemorrhagic manifestations pre-operatively requires drastic vitamin K therapy. Absorption of the fat-soluble vitamin will be possible only after gastric lavage of blood clots. Indeed, blood transfusion is a valuable preliminary in providing preformed prothrombin, combating shock and controlling bleeding. Then vitamin K concentrates and bile salts are administered daily by the

drip method until the prothrombin time becomes normal. But pre-operative normal prothrombin time does not always maintain post-operatively because surgical trauma and hepatic injury deplete available prothrombin reserves. Consequently, vitamin K therapy must be continued after operation and specific methods for improving hepatic function instituted. Repeated intravenous injection of hypertonic dextrose solutions, blood transfusions, calcium gluconate, glycerin solutions, supplemented by high carbohydrate diets improve liver function.

Hepatic Hypoprothrombinemia. — A child with primary liver disease may be unable to synthetize prothrombin from vitamin K judging from the failure of response to vitamin K therapy. The only means of improving blood coagulability is to correct the action of the liver pre-operatively. This may be attained by the usual regime of a carbohydrate diet, intravenous hypertonic dextrose and frequent blood transfusions, correlated with calcium gluconate and glycerine administration. With improved hepatic function, the intravenous administration of water-soluble vitamin K_5 enables more efficient formation of prothrombin. The compound is injected in doses of 10 to 20 mg. of 0.1 per cent solution daily until the prothrombin clotting time becomes normal. Success of vitamin K therapy in hepatic problems will be attained only if careful attention is given to pre-operative and post-operative regimen for raising the level of functional activity of the liver. In many cases all such attempts fail despite potent preparations and massive doses of vitamin K because of irreparable liver damage. Indeed, such failure with vitamin K therapy pre-operatively often aggravates hepatic insufficiency after surgery.

TREATMENT OF PLATELET DEFICIENCY

The child whose platelets are less than 100,000 per cu.mm. with or without active hemorrhage should not be subjected to surgery without first improving clotting function. Diminution of platelets are invariably associated with prolonged bleeding time, failure of clot retraction, positive tourniquet test, irrespective of purpuric phenomena. These are not always parallel to the degree of thrombocytopenia; hence the difficulty of determining whether surgical intervention will precipitate hemorrhage in children with borderline blood pictures. The first procedure is to determine whether the thrombocytopenia is symptomatic or essential, since both behave alike except for the presence of underlying processes in the symptomatic form of the disease. This must be established because the symptomatic form is amenable to medical measures and the essential to life-saving splenectomy. A reversal of these procedures may promote disaster to the afflicted child.

Multiple transfusions are effective pre-operatively for elevating blood platelets and arresting hemorrhage. Relief is temporary, lasting two or three days, which represents the average life of the platelets introduced. If the transfusions are repeated at three day intervals the platelets are maintained at normal levels, the bleeding time is diminished and clotting retraction re-established.

Protein shock induced by intramuscular injection of horse serum, typhoid vaccine, milk, liver and parathyroid extracts will often raise the platelets effectively to tide an acute case over a crisis in non-allergic children. The direct relationship between protein shock and thrombocytosis has led to the use of this reaction prior to the extirpation of the spleen. If the child shows a favorable

platelet response, splenectomy may be beneficial and *vice versa.*

Roentgen irradiation of the splenic area elevates blood platelets and controls bleeding. The dosage is usually 200 r units directly over the spleen every other day until about 1,000 r units have been applied, provided the reduction in lymphocytes is not excessive. Graded dosage is stimulative but excessive irradiation destructive of platelet and other hemopoietic products.

Splenectomy is dangerous in acute cases unless preceded by a transfusion to bring the hemoglobin and red cells to favorable levels. The platelet count is not a determining factor in surgical prognosis. Unfortunately, many of the acute cases represent the type of thrombocytopenic purpura in which there is insufficient production of megakaryocytes by the bone marrow and so the removal of the spleen is contra-indicated. It is in the chronic form of the disease that splenectomy induces clinical cure in 75 per cent of the cases and marked improvement in 90 per cent. Bleeding ceases promptly after the splenic artery and vein are clamped and the platelets rise to ten times their previous level within a week. Since shock, immediate or delayed, may occur following splenectomy, a typed donor should be available, so that an emergency transfusion may be given, after an intravenous drip of 5 per cent dextrose in normal saline.

Clotting diets predominant in proteins, fats, vitamins A, D and T are invaluable for platelet formation by the bone marrow. Such a regime is especially indicated in cases of thrombocytopenic purpura associated with nutritional disturbances. If nutrients essential for the clotting mechanism are not taken in adequate amounts, nor absorbed properly if properly provided, nor utilized if completely absorbed, the rate of platelet synthesis is depressed, especially in chronic nutritional disturbances as alimentary allergy, cyclic vomiting and other deficiency states. If the high protein and fat diet are reinforced by the fat-soluble vitamins higher platelet levels are insured. Vitamin T is present in egg yolk, viscera and sesame oil.

TREATMENT OF THROMBOPLASTIN DEFICIENCIES

Hemophilia, thrombopathy and thrombostenia are the three hereditary hemorrhagic disorders with chronic insufficiency in thromboplastin formation. Hemophilia is a disease of the male and the other two disorders occur in both boys and girls. Any surgical intervention involves tremendous risk from the standpoint of post-operative bleeding. Nevertheless, minor and occasionally even major operations may be undertaken if the afflicted child is given a large transfusion pre-operatively and another post-operatively from a typed donor kept in readiness at the bedside.

Thromboplastin extracts preserved in vacuo to maintain their potency are effective locally in mild bleeding. Fresh human serum, fresh tissue extract, raw meat juice, fresh cuts of meat, cephalin, powdered thrombin, glycerin extracts of dried brain or lung, kephrin or snake venom, are equally effective. Powdered products are preferable to solutions because they are not washed away so readily by the oozing blood. In applying such preparations it is necessary to remove loose clots in order to permit the active thromboplastin to come into direct contact with the oozing surface. Thromboplastin preparations are the only local measures of any value, for chemical styptics actually interfere with clot formation. Other agents such as placental extract, female sex hormone, oxalic acid and the like are totally ineffective.

Multiple transfusions preferably by the continuous drip method continues to be the most dependable hemostatic in preparation for operation or emergency treatment of hemorrhagic crisis. The clotting time of hemophilic blood attains normal levels within several hours and remains so for a day, the life of normal thromboplastin. A similar effect is produced when a plasma transfusion is given, hence the result is due to the added thromboplastin. Pooled plasma may be stored for weeks in a refrigerator without change in thromboplastin potency and may be transfused intravenously without regard to blood groups. The degree of improvement depends on the volume of plasma injected, although as little as an ounce of reconstituted plasma suffices to bring the clotting time of hemophilic blood within normal limits. Improvement may be evident within 30 minutes of an intravenous blood or plasma transfusion. Transfusions of 100 cc. at 12 hour intervals are preferable to those of 400 cc. at two day intervals.

TREATMENT OF VASCULAR DEFICIENCIES

The body has a dual defense against hemorrhage: (1) coagulability of the blood, and (2) vascular response to injury. The latter is involved in many more bleeding disorders than the former; hence the need for evaluating the vascular mechanism as well as the clotting components. Capillary resistance measured by tourniquet, graded suction or positive pressure tests indicate the presence of vascular defects. Capillary tonus decreases in a great variety of vascular hemorrhagic diseases with escape of normal blood as a result of trauma, pressure, avitaminosis, infection, chemical injury or lymphatic infiltration. Establishment of the diagnosis gives the therapeutic clue. Empirical methods are of no avail and lead to needless waste of sick days. Even transfusions are futile in most forms of vascular purpura. Effective therapy can be realized in vascular hemorrhagic disorders if the etiologic agent is discerned and acted upon accordingly.

Hereditary purpuras are not amenable to any dependable form of therapy. Since local defects in the nose and skin are relatively mild, surgical intervention is possible in unaffected organs without inducing hemorrhage. Hemorrhage episodes may be halted by determining the exact source of vascular defect for application of electrocautery, silver nitrate, chromic acid bead or submucous injection of 5 per cent quinine and urethane.

Nutritional purpuras respond promptly to oral parenteral administration of deficient vitamins, i.e., B_1, C and P. The body retains such vitamins almost completely, hence it is possible to administer the total curative requirement pre-operatively in one dose if desired. Vitamins B_1 and C are available in synthetic products and vitamin P may be obtained in the form of crude extracts of lemon rind in 500 mg. doses or in the form of more potent soluble eriodictin, in 10 mg. doses.

Allergic purpuras require a prompt elimination of offending allergens whether they be foods, drugs or bacteria. Endothelial permeability may be temporarily diminished by injecting calcium gluconate intramuscularly or intravenously, subcutaneous injections of ergotamine or by means of autohemotherapy. Surgical intervention will induce no hemorrhages after preliminary blood transfusion. Vitamin P administration in 10 mg. daily doses of eriodictin will raise the capillary resistance to normal levels during operative procedures or after prolonged desensitization of the offending allergens. Infectious purpuras may be alleviated by clearing underlying foci and maintaining satisfactory levels of

capillary resistance in the interim by means of vitamin P. Larger doses of the permeability vitamin are necessary to overcome continuous injury from bacterial toxins.

Mechanical purpuras are the most obvious of hemorrhagic phenomena because the associated systemic disorders point to endothelial damage by infiltration, thrombosis, hypertension, congestion, pressure or other forms of mechanical injury. No definite pre-operative measure is indicated other than specific therapy for the underlying disease.

SUMMARY

A loss of 30 cc. of blood in an infant is equivalent to the loss of 500 cc. or more in an adult, and the consequences are more deep-seated. Compensatory mechanism after blood loss is effective in the child with normal clotting mechanism, but ineffectual in one with hemorrhagic disease. Intravenous blood transfusion often constitutes a life-saving measure by providing the child's circulation with normal blood clotting substances.

Abnormal bleeding may be due not only to deficiency in the blood clotting components but also to defectiveness in the vascular endothelium. The tourniquet test is confirmative of vascular origin if blood components are normal. Deficiency of prothrombin may lead to fatal hemorrhage. Maintenance of normal level depends on availability of vitamin K for its synthesis by the liver. A level of 50 per cent is considered critical for surgical procedures although 25 per cent levels suffice for normal activity.

The diagnosis and treatment of vascular and clotting deficiencies are considered at length. Arrest of hemorrhage involves local treatment to control bleeding points and general treatment to promote intravascular clotting. The choice procedure depends upon pre-operative evaluation of the child's hemorrhagic status. The time to treat deficiency states most effectively is when they can be detected by laboratory means rather than be surprised by hemorrhagic symptoms. Prophylactic measures administered to mothers before or during labor is preventive of neonatal hemorrhage in the newborn; this is especially indicated if previous newborns have suffered from hemorrhagic disease. Treatment of the infant also is simple and effective. Multiple transfusions by the continuous drip method is the most dependable hemostatic in preparation for operation or for emergency treatment of hemorrhagic crisis. Transfusions are futile in most forms of vascular purpura. Hereditary purpuras are not amenable to any dependable form of therapy. Nutritional purpuras respond promptly to the administration of deficient vitamins.

RÉSUMÉ

Une perte de 30 c.c. de sang chez un enfant équivant á une perte de 500 c.c. ou plus chez. Un adulte et les conséquencies en sout plus sèrieuses. Chez l'enfant avec un mécanisme coagulant normal, la compensation effective se rétablet mais cela n'a pas lieu chez l'enfant ayant une maladie hémorrhagique. La transfusion sanguine intraveineuse sauve la vie en fournissant à la circulation de l'enfant un sang possedant les substances coagulantes normales. La perte anormale de sang n'est pas seulement due au manque de components sanguins coagulants mais aussi à une carence de l'endothelium vasculaire. L'épreuve du tourniquet nous renseigue sur l'origine vasculaire de l'hémorrhagie. Il les components du sang sont normanx. Le manaque de prothrombine peut entraîner le mort. Le niveau normal de la quantité de vitamine K pêrmettaut la synthèse de prothrombine par le foie est d'une importance

primordiale. Un niveau de 50% est critique pour intervention chirurgicale maís un niveau de 20% suffit pour activité normale.

L'auteur étudie à fond le diagnostic et le traitement des déficiences vasculaires et coagulantes. L'arrêt d'hémorrhagie demande l'arrêt local des points saignants et aussi des mesures générales ayant pour but la coagulation intravasculaire. La traitement de choux est déterminé par l'évaluation pré-operative d'état hémorrhagique de l'enfant. Le laboratoire nous renseigne; il ne faut pas se laisser surfirendre par les symptômes hémorrhagiques. Des mesures prophylactiques administrées à la mère avant et après l'accouchement empêche l'hémorrhagie néonatale chez le nouveauné; cecá est surt out de rigueur si les enfants précédents out souffert de maladie hémorrhagique. Le traitement chez l'enfant est simple et éfficace. Les transfusions sanguines par la méthode de goutte à goutte continue offre les meilleurs résultats pour la préparation du malade et le traitement d'urgence de crises hémorrhagiques. Les transfusions sont futiles dans la plupart des formes de purpura vasculaire. Les purpuras héréditaires na cèdent pas aux méthodes thérapeutiques. Les purpuras nutritionnels cèdent promptement à l'administration des vitamines qui mangment.

SUMARIO

La perdida de 30 centimetros cubicos de sangre en el infante es equivalente a la perdida de 500 cm cubicos en el adulto y las consequencias son aun de mayor importancia. Los mecanismos compensatorios del nino solo son efectivos en la hemorragia cuando su sangre coagula normalmente. Las transfusiones de sangre frecuentemente salvan la vida del nino cuando le suministran en suficiente cantidad los elementos necesarios para la coagulacion normal de su sangre. Las hemorragias en el nino se pueden deber tambien a ciertas alteraciones patologicas del endotelio vascular. La prueba del torniquete confirma el diagnostico de las hemorragias de origen vascular. La deficiencia de la protrombina puede resultar en hemorragias fatales, por lo tanto, es importante el mantener la concentracion normal de la vitamina K para su sintesis por el higado. Un nivel de 50 por ciento es considerado ya critico en las intervenciones quirurgicas, no obstante el ser un 25 por ciento suficiente en los estados normales.

El estudio del diagnostico y tratamiento de las alteraciones vasculares y de las deficiencias de la coagulacion de la sangre ha sido presentado con amplitud en este trabajo. El arresto de las hemorragias requiere un tratamiento local cuyo objeto es el controlar todos los puntos que sangren y un tratamiento general que ayude la coagulacion intravascular de la sangre. Es, por lo tanto, de gran importancia, el evaluar durante el periodo preoperatorio el estado hemorragico del nino. El tratamiento debe de ser preventivo. Medidas profilacticas deben de instituirse en la madre antes o durante el parto para evitar las hemorragias del recien nacido, muy en especial en todos los casos que presenten una historia de diatesis hemorragica en partos previos. El tratamiento del infante es generalmente simple y efectivo. Las transfuciones sanguineas dadas frecuentemente por el metodo continuo de gota a gota es el metodo de excelencia preoperatorio o durante una crisis hemorragica. Las transfusiones sin embargo son sin valor en las purpuras vasculares. Las purpuras hereditarias en general no responden al tratamiento. Las que se deben a deficiencias de la nutricion responden prontamente a la administracion de las vitaminas que son responsables.

Выводы

Потеря 30-и кубических центиметров крови у ребенка равняетсч потери 500 к. ц. у взрослого, а результаты ѳтой потери даже более єерьезны. Компенсаторный механизм у ребенка с нормальным механизмом свертывания крови присутствует и после потери крови, но может отсутствовать при наличии кроветочной болезни. Переливание крови в последних случаях часто спасает ребенка, снабжая его кров веществами способными ее коагулировать.

Ненормальное кровотечение происходит не только от недостатка коагулирующих веществ, а также в присутствии нарушения васкулярного эндотелиума. Недостаток протромбина может служить причиной смертельного кровотечения. Поддержка нормального зеркала протромбина зависит от присытствия витамина К и его синтеза в печени. Зеркало в 50 процентов может оказатьсч опасным при хирургических операциях, хотя при нормальных условиях 25-и процентное зеркало достаточно.

Автор описывает подробно диагноз и лечение васкулярных недостатков и нарушение механизма сворачивания крови. До-оперативная оценка геморагическоко статуса ребенка дает возможность избрать правильное лечение кровотечения. Статус этот нужно обличить при помощи лаболаторных процедур и лечить его во время, а не ждать внезапного появления кровотечения. Кровотечение у новорожденного можно продовратить лечением матери перед родами или во время родов. Найлучший метод подготовкч к операции это повторные переливание крови в случаях экстренного лечения геморагического кризиса. В большинстве случаев васкулярной пурпуры переливки крови не помогают. Гередитарныя пурпуры также невозможно лечит никакимбы то нибыло мотодом. Алиментарныя пурпуры быстро излечиваются придатком к диете недостаточных витаминов.

NOTICE is hereby given to all concerned that in accordance with Article XX, Paragraph I, of the Consitution of the International College of Surgeons that the International Board of Trustees had adopted the following amendments to the Constitution. These will be submitted to the International Assembly at the Waldorf-Astoria Hotel in New York City, N. Y., on June 16, 1943, for ratification. Article I, Paragraph 3 of the Constitution of the International College of Surgeons is hereby amended as follows: By striking out the wording of said Paragraph as it now appears and by substituting therefor the following words: "3. The Seal of the International College of Surgeons shall bear the following words: "Pro Humanitate". "The International College of Surgeons founded in Geneva, Switzerland, 1935 and incorporated District of Columbia, 1940." The power to change the wording or the style of said seal shall rest with the Board of Trustees. ARTICLE I of said Constitution is hereby amended by adding thereto two paragraphs to be known as Paragraph 8 and Paragraph 9, which shall read as follows: "8. The International College of Surgeons shall be composed of National Chapters which shall exist by virtue of charters issued by the Central Organization, and which shall comply with the Constitution and By-Laws of the Central Organizaion." "9. Chapters shall be composed of members of the various classes hereinafter described. Each member of a National Chapter shall be subject to the jurisdiction of the Central Organization of the International College of Surgeons as well as the jurisdiction of the Chapter to which he belongs." ARTICLE III of said Constitution is hereby amended by adding the words "of the National Chapters" after the word "membership" in the first line of said ARTICLE. ARTICLE III, Section I is hereby amended by adding the words "or over," after the word "age", in line two of said Section. ARTICLE III, Section 4 is hereby amended by striking out the italicized words after the word "over" in line two of said Section. ARTICLE III is hereby amended by adding a new section thereto to be called "Section 9. Ages of Members," which shall be in words and figures as follows: "The ages indicated for associate members, members and fellows, are set forth for guidance only. Each chapter shall have the right to provide in its constitution or by-laws, for the ages of admission for the various classes of members, depending upon the exigencies and customs of the country in which the chapter exists." ARTICLE V, Paragraph I is hereby amended by striking out the word "College" in line two of said Paragraph, and substituting the words "National Chapters" in lieu thereof. ARTICLE VIII is hereby amended by adding thereto Paragraph VII, which shall read as follows: "7. Whenever the term 'Dollars' is used herein, said term shall mean United States currency or its equivalent." ARTICLE X is hereby amended by adding the word "International" immediately before the words "General Assembly" whenever in said Article the words "General Assembly" now appear. ARTICLE XII is hereby amended by striking out Paragraph 7 thereof. ARTICLE XVII, Paragraph I is hereby amended by inserting the word "International" befor the words "General Assembly" in the first line thereof. ARTICLE XVII, Paragraphs 3, 4 and 5 are hereby amended by inserting the word "National" before the word "chapters" in the first line of each of said paragraphs. ARTICLE XX, Paragraph 2, the following words to be deleted: "provided a written notice is given two months in advance to each chapter and to every voting member of the College affiliated with a Chapter." ARTICLE XX, Paragraph 3, is hereby amended by striking out the whole of said paragraph as it now is worded and inserting in lieu thereof, the following words: "3. A written request for an amendment, signed by one hundred members of the College, representing at least five different National Chapters, shall make it mandatory for the House of

(Continued, page 156)

Un Caso de Lipoma de la Cara Toracica del Diafragma*

(Case of Lipoma of the Upper Surface of the Diaphragm)

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SUMMARY

The author reports a case of primary tumor of the diaphragmatic muscle which proved to be a lipoma on pathologic examination, and gives his method of treatment.

ME PERMITO presentar el siguiente caso de lipoma de la superficie superior del diafragma, operado con éxito por toracotomía, por el hecho de que los tumores de dicho septum son sumamente raros; y porque sus síntomas, siendo tan vagos, no han permitido el diagnóstico de la mayor parte de ellos durante la vida. Revisando la bibliografía que existe al respecto, nos encontramos con comunicaciones referentes sólo a 14 tumores primitivos del diafragma: 8 malignos, todos los cuales presentaron tejido sarcomatoso; y 6 benignos, de los que sólo 3 fueron lipomas: casos de Cooner (1897), de Clark (1887) y de Soderlund (1937).

Fueron diagnosticados correctamente, 1 lipoma (Soderlund 1937), un fibroma (Kincella) y uno maligno (Gross 1911); uno durante una intervención por presunto tumor del bazo (Sauerbruch 1913). El resto, o sean 10, lo fueron en la autopsia. Nuestro caso representa pues una pequeña contribución al conocimiento del diagnóstico y tratamiento de estas neoplasias.

R. M. P., de 14 años de edad, escolar, originario de México, D.F., me fué presentado en la consulta en julio de 1939 como presunto tuberculoso pulmonar por tener febrícula, tos y dolor en el hemitorax izquierdo, sin ataque ostensible del estado general.

Refiere el enfermo que hace cuatro años, a raíz de un traumatismo de mediana intensidad que recibió en el hipocondrio y flanco izquierdos, comenzó su mal; pero la investigación clínica demostró que los síntomas se sucedieron en el siguiente orden cronológico: febrícula, dolor y tos, y que el traumatismo tora-

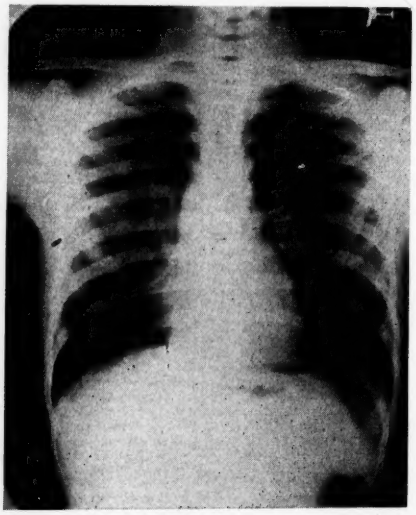

Fig. 1. Nótese en la base del hemitorax izquierdo la sombra ovoidea del tumor, la superposición de las sombras diafragmáticas y tumural y una bula gaseosa del ángulo esplénico, abajo del contorno diafragmático. No se aprecia ningún signo radiológico de quiste.

* Presented at the Third International Assembly of the International College of Surgeons in Mexico City, August, 1941.

coabdominal fué posterior al principio de dichos síntomas.

La aparición de la fiebre data de muchos años atrás y desde que recuerda el paciente ha tenido los siguientes caracteres: intermitente, irregular tanto en el horario de su aparición, como en la magnitud de sus ascensos y del tiempo que dura, pues a veces ha alcanzado 37°5 o 38°5 grados centígrados y otras no pasa de 37; en ocasiones vespertinas y otras en matinal; nunca ha durado arriba de 3 o 4 días consecutivos. Los intervalos de apirexia han sido en ocasiones de varios meses.

Dicha fiebre ha sido concomitante con una constipación de mediana intensidad de origen cólico y coincidiendo con un síndrome de disuria del cuello vesical y con orinas turbias; siendo facil de establecer la relación de causa a efecto entre aquella y ëstos, ya que al vaciarse el intestino, desaparecen fiebre, disuria y turbidéz de la orina. Este hecho, unido a la ausencia de síntomas de actividad tuberculosa pulmonar, digestiva o ganglionar, asi como a la no existencia de ninguna otra molestia referible a infecciones crónicas, nos llevaron a la conclusión de que la fiebre es un fenómeno ajeno y nó atribuible al cuadro torácico que a continuación analizamos.

El primer síntoma torácico fué el dolor, posterior en su aparición a la fiebre y anterior al traumatismo, el que, dicho sea de paso, solamente hizo fijar al enfermo la atención sobre sus síntomas. Los caracteres del dolor, en un principio muy vagos, se precisaron progresivamente hasta adquirir los siguientes: localizado en la base del hemitorax izquierdo, se iradiaba siguiendo el trayecto de los últimos intercostales y del frénico del mismo lado; de carácter lancinante y de intensidad variable, condicionado en su aparición por la mayor profundidad de los movimientos inspiratorios, por lo que se hacía aparente durante la gimnasia respiratoria, la fatiga, etc.; ningún síntoma lo precedía ni lo seguía y sólo cuando era muy intenso provocaba tos; disminuía su intensidad con el reposo para desaparecer tan pronto como la respiración se normalizaba. No tenía relación con las actitudes; no hubo nin-

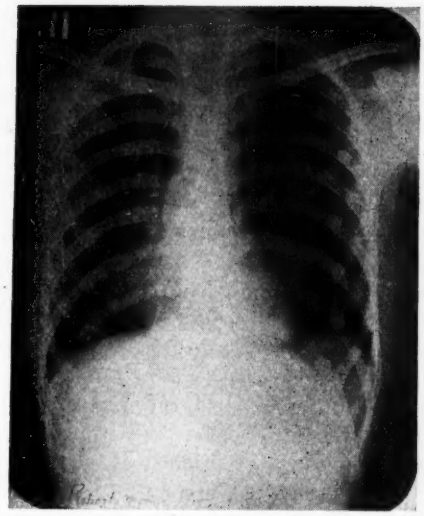

Fig. 2. Aspecto y magnitud de la masa neoplásica, dos meses antes de la que se representa en la Fig. 1.

Fig. 3. Imagen del tumor en P.L.D. mostrando su absoluta independencia del corazón.

gún síntoma de padecimiento broncopulmonar ni se encontró relación del dolor con la actividad funcional del estómago y del colon, principalmente del ángulo esplénico y porciones adyacentes de este último.

En cuanto a la tos lo único que puede decirse, es que nunca apareció si no ligada a la mayor intensidad del dolor; que se presentaba por tosiduras aisladas, seca, y nunca emetizante ni de actitud. Finalmente, debido a una limitación instintiva de la profundidad de las inspiraciones durante el ejercicio físico, aparecía ligera disnea con polipnea que se quitaba tan pronto como la hematosis correcta quedaba asegurada mediante inspiraciones poco profundas.

Haciendo caso omiso de la fiebre, nunca hubo ningún otro síntoma general. Por todo lo anterior tuvimos la presunción de que los síntomas torácicos estaban determinados por un proceso no inflamatorio de la base del hemitorax izquierdo, posiblemente extrapulmonar por la ausencia de síntomas que acusaran el ataque de dicha víscera.

Dicho proceso de la base del tórax, por el hecho de manifestarse por síntomas irritativos intercostales y frénico, así como por tos de tipo pleural, nos hizo desechar una localización mediastinal baja, máxime que no hubo nada que acusara repercusión sobre los órganos de esta porción del mediastino, excepto el dolor frénico izquierdo, el que, asociado a las molestias de tipo intercostal, precisan aun más el sitio afectado a una porción periférica de la base.

El resto del interrogatorio, investigando las posibles repercusiones del padecimiento supuesto, sobre el resto del organismo, asi como los antecedentes del enfermo, con la mira de precisar alguna etiología, no fueron suficientes para afinar más el diagnóstico, por lo que se procedió a la exploración minuciosa, tanto física como de gabinete, siempre

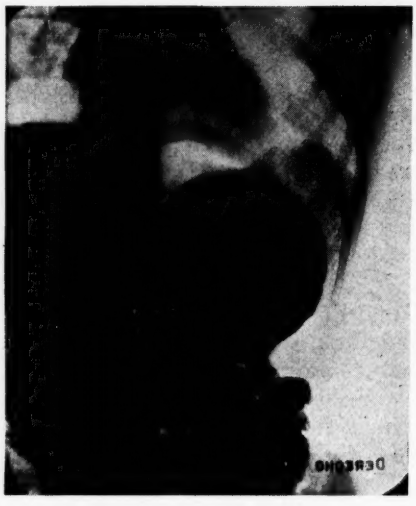

Fig. 4. Estómago lleno con bario y enfermo en Trendelenburg. Nótese el contorno interrumpido del diafragma y la absoluta independencia del estómago y el tumor.

sobre la base de que se trata de un padecimiento, no inflamatorio, no broncopulmonar, ni menos tuberculoso, de la parte baja del hemitorax izquierdo.

La exploración física de las porciones broncopulmonar y pleural del aparato respiratorio, demostró absoluta normalidad. En la base del hemitorax izquierdo a la altura del noveno espacio intercostal y aproximadamente entre las líneas axilar media y mamaria, se encontró una zona submate, sin límites definidos hacia arriba y hacia atrás, que se continuaba insensiblemente con la sonoridad pulmonar. El límite inferior de la sonoridad pulmonar era neto en el resto del hemitorax. La movilidad diafragmática, investigada por percusión fué normal. No hubo signo del velo de Turban, ni la auscultación reveló datos de ataque pleurítico de la base.

En el mismo lado izquierdo, los puntos de Valleix correspondientes a los últimos intercostales, asi como los puntos frénicos anteriores y del cuello, y los botones diafragmáticos anterior y poste-

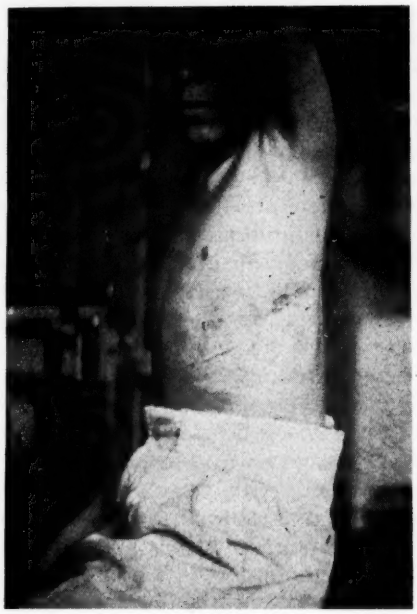

Fig. 5. Topografía, tamaño y dirección de la herida quirúrgica cicatrizada.

rior, estaban dolorosos a la presión. La exploración del area precordial, del mediastino y del abdomen, no arrojó ningún dato de anomalía. La fluoroscopía del tórax en posición postero-anterior, puso de manifiesto que se trataba de un tórax cuyo esqueleto, volúmen y movimientos son normales para la edad del infermo. Las playas pleuro-pulmonares son enteramente normales, mostrándose solo una ligera acentuación de la sombra hiliar en ambos lados.

Movilidad diafragmática normal. En la base del hemitorax izquierdo se aprecia una sombra comprendida entre la novena costilla y el diafragma, limitada hacia fuera por el contorno torácico y hacia adentro por la porción inferior de la sombra cardiaca. El contorno superior de dicha sombra es convexo hacia arriba y hacia afuera, siendo imposible de determinar su límite inferior. El arco inferior izquierdo de la sombra cardiaca y el límite superior de la sombra anormal encontrada, forman un ángulo agudo. La densidad de la sombra, comparable a la de la cardiaca, es menor que la de las costillas. Durante la sístole cardiaca se demuestra una absoluta independencia entre ambas sombras; en cambio, con la inspiración profunda, dicha sombra desciende sincrónicamente con el diafragma, no obstante el cual no es posible definir su límite inferior. A la radioscopía lateral se encontró la misma sombra de convexidad superior, de movilidad sincrónica con el diafragma, e independiente del corazón y de la columna vertebral.

La exploración del estómago, previa ingestión de papilla baritada y en Trendelenburg, hizo ver la absoluta independencia de la cámara gástrica y de la sombra patológica en cuestión. La radioscopía del ángulo esplénico lleno de bario, dió datos semejantes. Por todo lo anterior se confirmó la existencia de un proceso patológico, no inflamatorio, de la base del hemitorax izquierdo, posiblemente de naturaleza neoplásica o quística.

En radiografía en postero-anterior, (Fig. 1) se precisaron y confirmaron los datos obtenidos por la fluoroscopía, ratificándose una vez más la no existencia de tuberculosis pulmonar en actividad. En lo referente al proceso patológico de la base, se encontraron nuevos datos en favor de una neoplasia, como son: límites definidos hacia arriba y hacia afuera; abajo y adentro en parte perdidos por la superposición de la masa neoplásica a la sombra diafragmática, pudiéndose sin embargo diferenciar una de otra, apreciándose así que se trata de una sombra ovoidea con su polo inferior hacia abajo y afuera. Los datos anteriores hacen en parte la diferenciación con un quiste, cualquiera que sea su naturaleza, por no existir la nitidez del límite superior, en línea gruesa o delgada. (Signo de Constantini), ni tampoco el doble contorno en forma de media luna superior (des-

crito por Brun y Jaubert), llamado por Belot y Peteuil despegamiento del vértice, los que han sido considerados como patoneumónicos de los quistes.

El estudio radiológico del estómago lleno con bario y en Trendelenburg, confirmó la independencia absoluta de este y del tumor, ambos separados por el diafragma. El hecho de que en la radioscopía, al descender el diafragma arrastrara consigo al tumor sin hacer variar el contorno de éste y sin poder definirse el límite neto de la cúpula diafragmatica en contracción, hace desechar la posibilidad de un tumor esplénico que rechazará el diafragma, así como la existencia de eventración diafragmática.

Con el fin de localizar la implantación del tumor, se hizo un neumotorax diagnóstico, que demostró a la radioscopía la absoluta independencia del pulmón colapsado y del tumor, cuya magnitud pudo apreciarse perfectamente, así como su adherencia al diafragma. Puesto que hemos demostrado que el tumor en cuestión no es ni abdominal ni pulmonar, nos queda solo por precisar si es diafragmático o pleural, inclinándonos a aceptar como su origen lo primero, en vista de la escasísima sintomatología pleural, ya que los únicos síntomas y signos que se obtuvieron, corresponden no a una reacción, sino a una irritación de dicha serosa.

Con objeto de desechar definitivamente la existencia de un quiste hidatídico del diafragma, se practicaron las reacciones de Weimberg y de Cazoni, resultando negativas.

La fórmula leucocitaria y la numeración de glóbulos blancos, excepto una eosinofilia de 8 por ciento, fueron normales. El hecho de haber sido un único exámen de sangre y teniendo presentes todos los datos anteriores en contra de un quiste, hace perder a la eosinofilia su valor diagnóstico de una hidatidosis.

Con el diagnóstico de tumor primitivo de la cara torácica del diafragma, quedaba por resolver si era benigno o maligno. El hecho de haberse manifestado desde muchos años atrás, sin haber modificado en lo más mínimo el estado general, sin haber dado metastasis de ninguna clase, ni haber perturbado la pleura suprayacente, inclinan el diagnóstico hacia la benignidad. Sin embargo, por estar el tumor en un órgano fibromuscular y siendo probable su naturaleza fibromatosa o miomatosa, y por evolucionar en un jóven, es siempre de temerse una degeneración sarcomatosa.

Quedando establecido definitivamente el diagnóstico de neoplasia primitiva del diafragma, de naturaleza, hasta la fecha del examen, probablemente benigna, se planteó la indicación operatoria fundándola en lo siguiente: lo molesto de los síntomas subjetivos que tenían al enfermo reducido a una relativa inactividad física; al peligro de que se degenerara dicho tumor o bien que por su crecimiento, ya que no por su malignidad histológica, alterara por compresión órganos tan importantes como el corazón, pulmones y formaciones mediatinales.

Por causas ajenas a nuestra voluntad no se llevó a cabo la intervención indicada tan pronto como era de desearse, habiendo examinado al enfermo, por este motivo, otros médicos, quienes dudando del diagnóstico, que les fué dado por el mismo enfermo, practicaron endoscopía pleural y neumoperitoneo, confirmando en todo el diagnóstico antes dado, de tumor primitivo de la cara torácica del diafragma.

Con el diagnóstico citado, estando correctas todas las pruebas pre-operatorias y con la preparación especial previa a una intervención intratorácica, practicamos la operación planeada, el 4 de julio de 1940 previo neumotorax y con anestesia por ciclopropano a hiperpresión, llevando la asepsia del campo hasta el

muslo del mismo lado por si hubiese sido necesario hacer suturas con facia lata o ingertos plásticos al diafragma.

El trazo de la incisión (Fig. 5), comprendió de la línea escapular a la mamaria del lado izquierdo, siguió el trayecto de la novena costilla la que, después de la sección de los planos musculares a ella superpuestos, fué resecada subperiósticamente en la misma magnitud de la incisión. Sobre la parte media del lecho costal, fué abierta la pleura parietal y colocado el separador. El tumor, perfectamente encapsulado, de forma y volúmen semejantes a un corazón de buey, estaba implantado en la parte anterior y periférica del diafragma, contrayendo adherencias con la décima y onceava costillas; con esta última suficientemente recias para no dejarlo movilizar en las maniobras de aislamiento del pedículo. De la parte media de la incisión se llevó otra hacia abajo, perpendicular a ella y fueron resecadas una pequeña parte de la décima y onceava costillas, quedando la porción de esta última adherida al tumor (Figuras 6 y 7). Se liberó la masa tumoral de las adherencias al pericardio, hacia dentro, y el pedículo fué seccionado y ligado por transficción.

No habiendo revelado la exploración de los órganos intratorácicos, expuestos a través de la brecha, ninguna anomalía, se cerró el tórax en dos planos sin dejar canalización, pasando unos puntos de refuerzo con seda. El enfermo abandonó la Sala de Operaciones con 80 pulsaciones por minuto y presión arterial máxima de 120 y mínima de 65 milimetros de mercurio; quedando durante 24 horas sujeto a la administración constante de oxígeno concentrado poco más o menos a 40 volúmenes por ciento. La sección del tumor mostró, macroscópicamente, un lipoma simple.

La evolución post-operatoria fué perfecta y sin contra tiempos durante cinco días; al sexto día, y después de un esfuerzo brusco y enérgico del enfermo, se formó un pequeño hemotorax sin más síntoma que la curva febril característica de los hemotorax no infectados, tos seca, y los datos de exploración fueron los de un derrame pleural pequeño. Como único tratamiento se hizo una punción evacuadora al octavo día, y el enfermo abandonó el Sanatorio, por curación, el 15 de julio, diez días después de operado.

El exámen anatomo-patológico de la pieza hecho por el Dr. Isaac Costero se transcribe íntegramente a continuación: "La Tumoración enviada para su estudio anatómico mide 82 x 75 x 45 mm., pesa 110 gms., tiene volúmen de 140 cc. flota en el agua pero no en el alcohol. Está correctamente limitada por una cápsula conjuntiva a la que se encuentra adherido un fragmento de hueso costal de 40 mm. de longitud que carece de alteraciones macroscopicas. La superficie de sección tiene color amarillento y as-

Fig. 6. Fotografía de la pieza anatómica. La mancha clara de la porción inferior derecha es la zona de implantación del tumor al diafragma, abajo de ella se ve el fragmento de la onceava costilla fuertemente adherido.

pecto de grasa. Seccionado en todas direcciones por cortes muy próximos entre sí, se encuentran escasas formaciones conjuntivas fibrosas en forma de travéculas nacaradas y duras de escaso espesor, que se reparten con irregularidad y no producen lobulaciones en la masa del tumor. Cuando un corte delgado de la masa tumoral se deshidrata en alcohol, y se trata por cualquier disolvente de las grasas, queda solamente un armazón esponjoso muy delicado, desapareciendo por completo la substancia amarillenta que rellena los huecos intermediarios. Existen algunos vasos sanguíneos de pequeño calibre que parten de la cápsula y penetran a poca profundidad en el tumor. No se encuentran zonas de reblandecimiento, cristales de jabones, ni de colesterol, depósitos calcificados, ni masas mixoides. Estos caracteres anatómicos corresponden a los de un tumor benigno de tejido adiposo.

Tales tumores se localizan ordinariamente debajo de la piel, en la intimidad de los músculos, debajo de las membranas cerosas y en el tejido celular retroperitonel. Más raras veces se encuentran en las submucosas de algunos órganos internos, como el intestino y la laringe. También han sido descritos en las articulaciones en forma de tumores arborecentes intra-articulares, en las meninges, en la mama, en el riñón, en el hígado, en el timo, en los pulmones, en la pared del corazón, en las trompas de Falopio, en el útero, en el cordón espermático y en la médula osea. Cuando, como en estos últimos casos citados, el tumor se desarrolla en tejidos que normalmente no contienen células adiposas, se le considera clasificado entre las tumoraciones derivadas de gérmenes anatómicos desplazados (Coristomas), grupo en el que podía incluirse también el que acabamos de describir."

Doy las gracias a mi Maestro el Sr. Dr. Don Darío Fernández quien tuvo la gentileza de acompañarme en la intervención, y al Dr. Don Isaac Costero quien practicó el exámen anatomo-patológico del tumor extirpado.

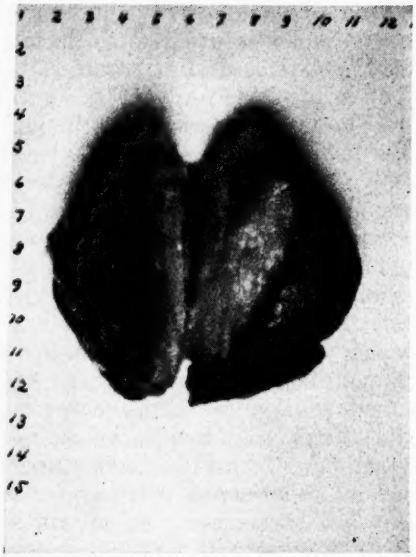

Fig. 7. El tumor seccionado muestra, macroscópicamente, su estructura lipomatosa.

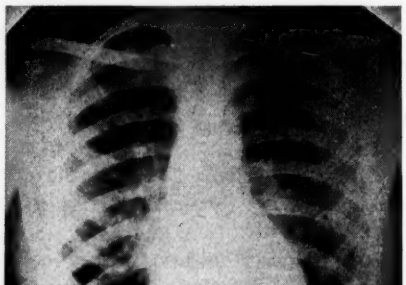

Fig. 8. Radiografía tomada después de la operación.

SUMARIO

El autor presenta un caso de tumor primitivo del diafragma que demostró ser un lipoma en el examen anatomopatologico. Revisa la bibliografía y hace un resumen semiológico de la cuestión, relatando además el tratamiento operatorio del caso, que fué coronado por el éxito.

RÉSUMÉ

L'auteur presente un cas de tumeur primitive du diaphragme que se montra un lipome a l'étude anatomo-pathologique. Il revoit la bibliographie et fait un résumé seméiologique de la question. Il en décrit aussi le traitement operatoire que a été couronne par le succès.

Выводы

Автор докладывает случай примитивной опухоли в мускуле диафрагмы, которая оказалась липомой и описывает его методу лечения.

CONSTITUTION AND BY-LAWS OF THE UNITED STATES CHAPTER

(Continued from page 88)

medical and surgical agencies rests entirely with the Executive Council and its President.

8. In controversies arising between the President and the Executive Council on important matters of policies, or otherwise, the Executive Council shall make the final decision.

9. If necessity arises, the Executive Council shall have the right to create new boards and committees to which it may delegate some of its duties, providing that at all times those new boards and committees shall remain answerable to the Executive Council.

10. The Executive Council shall have the power to call an *emergency meeting* of the House of Delegates providing a thirty (30) day notice is given to its membership by the Executive Secretary in writing.

11. The Executive Council shall have the right to recognize merit by requesting the International Executive Council to confer honorary degrees upon distinguished and outstanding surgeons, regardless of the fact that they are not members of the International College of Surgeons.

12. *Quorum.* At meetings of the Executive Council of the United States Chapter four members and the Presiding Officer, plus a sufficient number of proxies to total a majority of the Council, shall constitute a quorum.

13. *Minutes.* The Executive Council shall keep detailed minutes of its sessions and the first order of business of any meeting shall be the correction and approval of the minutes of the preceding meetings.

14. The second order of business of the Executive Council shall be the correction and approval of the monthly financial reports of the Treasurer.

15. Any member of the Executive Council failing to attend two successive meetings of the Council without adequate excuse shall be automatically regarded as having resigned.

16. *Meetings.* There shall be at least four meetings of the Executive Council of the United States Chapter, called by the President or by the Executive Secretary, on the written request of three members of the Council.

Article XII.

Board of Examiners.

1. The members of the Board of Examiners shall be chosen so as to represent geographical districts of the Chapter.

2. The members serving on that committee shall be persons recognized for their educational and academic attainments.

3. The members of the Board of Examiners, in collaboration with the District Regent shall organize within their own territorial districts examining boards to pass upon applications and to conduct qualifying examinations of applicants.

4. The chairman of the Board of Examiners shall gather all possible information concerning the professional, ethical and moral fitness of the candidates.

5. He shall arrange for candidates examinations and clinics and provide for suitable examinations and see that judges be provided to attend the examinations and the operative clinics of candidates.

6. After having gathered all possible information concerning the candidates he shall submit impartially the results of his investigations to the Executive Council sitting as Committee on Credentials.

7. The chairman of the Board of Examiners shall have the privilege of making recommendations concerning the acceptance, postponement or rejection of candidates without making the recommendations mandatory.

Article XIII.

Credential Committee.

1. The duties of the Credential Committee shall be to award, withhold or for substantial reasons, suspend or cancel membership credentials already given. In conferring or withholding degrees to applicants, the Committee on Credentials, shall be guided by the recommendations of the Board of Examiners without, however, making them mandatory.

2. The Executive Council shall act as the Committee on Credentials.

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Unusual Cause of Uterine Bleeding

Retained "Gold Button" Pessary

MORRIS WEINTROB, LT. COMDR. M.C., U.S.N.R.,
AND DAVID I. WEINTROB, 1ST LT., M.C., U.S.A.

ALTHOUGH up to 1938, only a few articles discussing either the "gold-button" or Graefenberg ring appeared in the literature, Dickinson stated in 1926 that he had personally viewed a woman physician's case history record of 1,000 "wishbone-stem" pessaries.

The present case report is added to the literature, even though it is our sole experience with the subject, in the hope that it may teach a lesson that might otherwise be overlooked.

A physician confronted with the problem of uterine bleeding hardly ever, if at all, considers the "gold-button" or Graefenberg ring as a possible etiologic factor. Indeed, none of the standard textbooks refer to the subject nor can either of us recall any mention of the matter during our student days.

A study of the literature revealed a number of interesting findings. These pessaries, even when well retained, do not prevent conception. Gummert, discussing a paper by Clark,[1] reported 78 abortions in 92 patients who became pregnant despite the pessaries. Of these, 87 per cent were septic, 37 per cent developing peritonitis, with 10 fatalities. Reist, referred to by Clark, described 17 fatalities as the result of perforation of the uterus by a Graefenberg ring. Potter[2] and Cregan[3] added further fatal cases.

Spontaneous expulsion of either type of pessary may take place without the knowledge of the patient, thus giving the latter a false sense of security. In 5 of 26 cases of expelled Graefenberg rings reported by Leuenbach,[4] pregnancy came as a complete surprise. Green-Armitage[5] added a case of infected abortion after 9 weeks of pregnancy, with a Graefenberg ring being found in the expelled chorion.

The presence of such a pessary also does not always lead to spontaneous abortion. In one of Potter's cases a Graefenberg ring was removed at the time of delivery. In another of his cases, a stem pessary was removed in the seventh month, with the patient continuing to full term and normal delivery.

Occasionally, it has become necessary to remove such a pessary because of marked abdominal cramps, profuse leukorrhea, excessive menstrual flow, or even persistent intermenstrual bleeding. Of interest in this connection is the case reported by Kimbrough and Tompkins,[6] wherein removal of a Graefenberg ring was done in the second month, with the patient continuing to full term. A previous pregnancy had ended in miscarriage in the eighth month.

Unfortunately, an occasional hysterectomy has been required. In a case reported by Daveo and Prat,[7] a "gold-button" pessary encrusted in the cervix and uterus of a 61-year-old woman was the real cause of an intermittent and irregular metrorrhagia, which induced them to perform a complete hysterectomy through fear of the presence of

carcinoma. The pessary had been inserted 31 years previously, its insertion completely forgotten by the patient, and the possibility of such an etiologic factor never having entered the minds of either of her attending physicians. Adair[8] discovered a pessary in a 51-year-old patient upon whom he performed a hysterectomy, in which instance the "wish-bone" had been present for 15 years. Sussex[9] and Arnold[10] added 2 cases of hysterectomy in young women as an aftermath of such pessaries.

Ordinarily, the average physician does not make an X-ray examination of the pelvis a standard pre-operative requirement. If such were the usual practice, less radical procedures might result in cases of otherwise unsuspected retained pessaries.

CASE REPORT

H. G., age 22, married, consulted one of us in February, 1942, because of almost constant vaginal bleeding. She had been married three and one-half years, and had taken no precautions for the latter two years. Injections by a previous physician had been administered throughout August and September, 1941, and again in December and January, 1942, without any cessation of the vaginal bleeding. Abdominal cramps preceded what she recognized as her regular menstrual period, as well as during practically the entire intermenstrual period. At most, she was occasionally free from staining for four or five days a month.

A history was obtained to the effect that through the first year of her marriage she wore a "gold button." At the end of the year she returned to the physician, who had inserted the pessary, for its removal. She stated that the doctor had told her it was broken, apparently having removed the cap and then doing nothing further about the other part. According to her statement, his comment was: "I guess you lost the other part."

On examination, the cervix presented no erosion, no cervical polyp was evident, and there was a slight bloody discharge coming from the endocervical canal. The tubes and ovaries felt normal, although the left ovary was slightly tender. The uterus was in good position, normal in size, with the sensation of a small mass on the left aspect of the anterior surface of the fundus, about a split pea in size. This was at first interpreted as a small, subperitoneal fibroid.

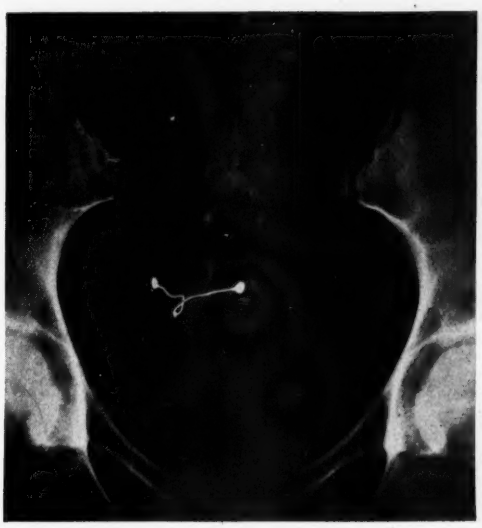

Fig. 1. Broken "gold button" pessary in utero.

In view of the history of a gold spring pessary having been inserted, the cervix was probed and the impression was obtained that a metallic substance was present in the endocervical canal. X-ray examination of the pelvis showed the presence of a wire-shaped type of foreign body, with blunt ends which gave the impression of being the remnant of a pessary (Fig. 1). The roentgenologist stated "it is probably within the uterus."

The patient and her husband were advised of this finding and informed that an attempt would be made to remove the broken part of the pessary by dilatation of the cervix. If any difficulty were encountered as a result of the broken part of the shaft being imbedded in the cervical canal and extensive manipulation to free it be required, because of the tendency for one of the prongs to distend the wall of the uterus and the consequent danger of perforation during the manipulation, a hysterotomy or even a hysterectomy might be necessary.

On March 1, 1942, the patient was operated on under general anesthesia. The cervix was dilated. The rough, broken, corroded end of the shaft of the spring button pessary was found imbedded in the left wall of the endocervical canal. It was gently freed, care being taken not to exert force upward in order to prevent perforation at the fundus by the imbedded left prong. By means of a curved stone-crushing forceps, the shaft was grasped and withdrawn from the uterus with ease. The endometrium was then gently curetted. The patient was discharged from the Adelphi hospital on the following day in good condition.

On April 10, 1942, pelvic examination was negative. Menstruation had occurred on March 13th and lasted three days and was normal in amount. There had been no intermenstrual bleeding, no vaginal discharge and no abdominal cramps. The curettings were reported as follows: "Curettings are composed of blood with only an occasional piece of endometrium present. Surface of this endometrium is thrown into folds and infoldings and both the surface and the glands are lined by several layers of columnar epithelium with oval nuclei that are at various levels. Surrounding stroma is compact. Stromal cells are darkly stained and have little or no cytoplasm and there is an extravasation with erythrocytes. *Diagnosis:* Hyperplasia of the endometrium (proliferative phase)." The patient has since been delivered of a normal infant.

SUMMARY

The author discusses the danger of the use of pessaries and their relative inefficiency. He also reports a case in which part of a broken pessary was responsible for almost continuous uterine bleeding in a young woman 22 years of age.

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SUMARIO

El autor presenta un estudio de el peligro de el uso de pesarios y su relativ inutilidad. Tambien reporta un caso in el cual parte de un pesario roto fue responsable de una hemorragia uterina casi constante en una joven de 22 años.

RÉSUMÉ

L'auteur présente une étude sur les dangers qu'entraîne l'emploi des pessaires. Il démontre aussi leur insuffisance relative. Il rapporte un cas dans lequel un pessaire brisé entraîna une hemorrhagie uterine continuelle chez une jeune femme agée de vingt-deux aus.

Выводы

Автор сообщает наблюдения об опасности употребления пессария и его недостатки. Он докладывает случай в котором кровотечение из матки у женщины 22-х лет продолжалось почти без перерыва и причиной которого была часть поломеннаго маточного колыца (пессария).

(Continued from page 145)
Delegates, or the Board of Trustees to consider the Amendment presented and to vote upon it." ARTICLE XX, Paragraph 4 is hereby amended by striking out the whole Paragraph 4 thereof, and adding the words "and officers" to ARTICLE XXII on line two immediately following the words "various committees." AND, WHEREAS, it appears necessary to clarify the By-laws of the International College of Surgeons, BE IT, THEREFORE, RESOLVED that said By-laws are hereby amended as follows: ARTICLE III, Paragraph 5 of said By-Laws is amended by striking out Item 4 under the heading "Opening Session" and by renumbering the other items following said item. ARTICLE III, Paragraph 5, Item 8 thereof, under the heading "Opening Session" is hereby amended by striking out the words "Election of Committee on Nominations" and substituting in lieu thereof, "Appointment of Committee on Nominations." ARTICLE IV, Paragraph I thereof shall be amended by striking out Paragraph I as it now appears and by substituting in lieu thereof, the following: "I. *Committee on*

(Continued, page 166)

Momento Quirúrgico de las Úlceras Gastro-Duodenales*

(Surgery in Gastric and Duodenal Ulcers)

ANTONIO J. CASTILLO, M.D.
CARACAS, VENEZUELA

SUMMARY

The term "gastric and duodenal ulcers" is applicable to those ulcerated areas exposed to the gastric juice. The author concludes that all ulcerations, acute and subacute, should receive prompt treatment because of their tendency to become chronic. Surgery should not be delayed if favorable results are expected in these cases. Gastrectomy is recommended as the method of choice, since the mortality rate is very low (2 per cent) in the hands of well trained surgeons. Roentgenographic studies should confirm the diagnosis in all cases. The author discusses the pre-operative preparation of the patient, criteria concerning the anesthesia and the surgical technic.

DECIAMOS en nuestro trabajo de Incorporación como Individuo de Número a la Academia Nacional de Medicina: Presentamos un tema de cirugía que conceptúamos de gran importancia entre nosotros, dados los magníficos resultados terapéuticos que con él se obtienen, pero qué desgraciadamente no nos es fácil de alcanzar, porqué no hemos llegado todavía a un mutuo acuerdo entre cirujanos e internistas.

Con R. Jack siempre hemos unido en el mismo vocablo (gastric and duodenal ulcers) los procesos ulcerosos de aquellas regiones expuestas al contacto del jugo gástrico.

Tratándose del Congreso del Colegio Internacional de Cirujanos, donde están presentes, todos, hombres que conocen bien la materia y que muchos de Uds. son maestros en el arte y deseando tan sólo traeros una humilde colaboración, trataremos en esta breve exposición, que reglamentariamente no debe pasar de treinta minutos, de daros un sencillo aporte personal a este problema al cual nos hemos dedicado desde el año de 1923. De 1923 al 1932 practicamos diferentes técnicas y métodos quirúrgicos para el tratamiento de las úlceras del estómago y duodeno, con muy diferentes resultados terapéuticos; desde el año de 1932 hemos practicado en esta affección casi exclusivamente la gastro-pilorectomía y las conclusiones que expondremos son el resultado de las últimas ochenta (80) gastro-pilorectomías practicadas en los años de 1939-1940 y en el primer semestre del año en curso (Casos de los doctores M. Corachan y A. J. Castillo).

No creemos traer nada nuevo, ni original, sino tan solo exponeros un criterio y una conducta que nos ha dado magníficos resultados terapéuticos y una técnica operatoria, que sin ser personal, reune una serie de tiempos que no están así descritos en los textos y que nos parece facilitan grandemente el procedimiento quirúrgico.

* Presented at the Third International Assembly of the International College of Surgeons held in Mexico City, August, 1941.

Ojalá podamos operar algún caso aquí y poner de manifesto la exactitud de lo que nos permitimos exponer ante el consciente criterio de Uds.

Las diferentes terapeúticas de esta afección basadas en los trabajos de Leriche, en la concepción de Pribram, en la tesis defendida por Balint, en el Método de Hugh Maclean o en la Memoria del Profesor de Baco, han dado en manos de sus autores resultados satisfactorios según cada uno de ellos y cualesquiera de las teorías patogénicas del ulcus gastroduodenal, que se admita la teoría gástrica, hiperclorhidrica, mecánico fúncional, infecciosa, neurovegetativa, vascular, constitucional o por carencia de aminoacidos, no llegan a establecer en todos y cada uno de los casos una conducta definitiva y clásica según la sintomatología que se nos presente, pero de todo ello hay un hecho real y claro que debe privar en el criterio de los cirujanos y es que no hay duda que toda ulcera aguda y reciente debe ser tratada por un tratamiento médico consciente y suficientemente largo, que trae la curación de ella en un porcentaje elevado de la afección, pero, cuando la úlcera entra en el período de la crónicidad y aquellas tratadas medicamente por tiempo suficiente sin resultado ostenciblemente favorable, debemos decir categóricamente que han pasado al campo del bisturí.

Hemos llegado a este criterio rádical pues estamos cierto que todas estas úlceras crónicas no se curan de otra manera y aunque hay pareceres muy diferentes de autores eminentes que hablan de indicaciones quirúrgicas absolutas, relativas u opcionales, las primeras indiscutibles, las segundas practicamente lo mismo y las ultimas no significando sino una demora peligrosa, pues estas esperas pueden acarrear, algunas veces, complicaciones mortales y en otras una transformación malígna de una úlcera gástrica, para llegar aún en los casos de curación a la estenosis pilórica por cicatrización conjuntiva inextensible y al consiguiente acto quirúrgico liberador.

Estas diferencias de criterio se deben a que los internistas todavía desean conservar bajo el dominio de la Medicina esta afección, que cada día más se acerca al campo de la cirugía y quizás sea ésta una causa del fracaso debido al estado en que se nos presentan algunos pacientes agotados física y moralmente por un padecimiento de 20 a 30 años y en los cuales han ingerido enormes cantidades de drogas, por tanto, fuera de la úlcera agúda, creemos que toda úlcera gastroduodenal crónica, es una afección quirúrgica y que solo este tratamiento produce su curación y garantiza el porvenir de nuestro enfermo.

Todos saben hoy el valor que tiene el interrogatorio o anamnesis de un enfermo digestivo habilmente guiado. Hoy tenemos signos clínicos que nos permiten por ellos solos hacer el diagóstico de úlcera gástrica o duodenal, pero la Clínica es incapáz ella sola de hacer una exácta localización de la úlcera y los exámenes radiográficos y radioscópicos son de una importancia capital.

La radioscopía es siempre interesante, permite controlar el modo de replesión y evacuación de la región pilórica y el bulbo duodenal. Es sin embargo insuficiente pues deja escapar toda una serie de detalles teniendo que recurrir a la radiografía.

Basado en otros tiempos el diagnóstico de la úlcera duodenal sobre argumentos exclusivamente clínicos y creyéndose durante largo tiempo que todo enfermo que presentaba dolores tardíos calmados por ingestión de alimentos debía ser considerado como un caso de úlcera duodenal, nos condujo ésta fórmula a un cierto número de laparotomías inútiles, pues en muchos casos el cirujano no descubría ninguna úlcera a la intervención y sí practicaba a pesar de la duda una gastro-

enterostomía no prestaba ningún servicio útil a su enfermo, sobreviniendo casos en los cuales fué necesaria una reintervención con el objeto de suprimir la anastomosis.

La ayuda radiológica en estas afecciones requiere un perfecto conocimiento del método y de los detalles de técnica, posición, momento favorable e interpretación exacta de los hechos.

La radiografía permite afirmar el sitio de la úlcera sobre el duodeno. El médico buscará el momento de una crisis evolutiva y fuera de todo fenómeno hemorrágico. Repetirá a intervalos frecuentes esta exploración, si la primera no ha dado resultado favorable. El resultado negativo de las placas no debe hacer abandonar el diagnóstico que los signos clínicos hacen suponer. Hay que hacer una serie de radiografías que muestren los aspectos de replesión y evacuación del bulbo duodenal.

Todo cirujano debe, en fin, saber interpretar estas radiografías. La ausencia de la imágen radiográfica típica al nivel del borde interno del bulbo no le autoriza a negar el diagnóstico de úlcera, el debe, al contrario buscar el nicho de cara, éste puede no existir sino en una o dos placas pero ello basta para afirmar el diagnóstico.

Hoy tenemos medios variados de investigación, que no mencionaré por ser ello innecesario ya que son conocidos de todos Uds., pero que permiten con exactitud hacer el diagnóstico diferencial entre las úlceras del estómago o duodeno, con: las afecciones locales gastro-duodenales, neurosis gástrica, simples dispepsias, gastro-duodenitis, cáncer gástrico, tumores benignos, sífiles, tuberculosis, síndrome doloroso epigástrico por ptosis gástrica o duodenal, divertículos, síndrome gástrico por distensiones y vólvulos estomacales, colecistítis, apendicítis, pancreohepatitis y hernia epigástrica.

La cirugía gástrica en manos de cirujanos expertos ha mejorado notablemente el porcentaje de mortalidad, hoy no debemos aceptar en las gastrectomías por úlcera gástrica o duodenal un porcentaje mayor de 2 por ciento.

Hemos tenído dos fracasos en estos ochenta casos lo que daría 2 y ½ por ciento, pero es necesario darse cuenta de que el número de casos de que trato es insuficiente para afirmar un índice de mortalidad.

Por otra parte tenemos la esperanza de que aún ese porcentaje de mortalidad de 2 por ciento disminuirá, no por mayor habilidad quirúrgica de los que practicamos ésta clase de cirugía, ni por mejoras en las técnicas empleadas, sino porqué los médicos internistas se convencerán algún día de la inutilidad del tratamiento médico de las úlceras crónicas y los enfermos llegarán a nuestras manos en mejores condiciones, menos agotados y sin haber esperado para resolverse al acto quirúrgico curativo, veinte o treinta años de vida miserable que agota no sólo sus fuerzas, sino también su sistema nervioso y los hace transformar, como todos los hemos visto en seres verdaderamente desgraciados, que llevan una vida insoportable, no viviendo sino para su estómago, hasta el momento que ya cansados de sufrir recurren a nosotros, no por confianza sino por desesperación.

EXAMENES Y PREPARACIÓN PRE-OPERATORIA

"Todo enfermo que se queje de disturbios dispépticos, puede no sólo tener una úlcera gástrica o duodenal sino también una dispepsia refleja, debida a una apendicitis, una colecistitis, etc.

"Todo dispeptico será sometido a un exámen radiológico completo. El cirujano no sólo necesita practicar un exámen del estómago, sino también de todo el tránsito intestinal. Una simple radiografía es insuficiente las más de las veces, a menos de observar una imágen patognomónica, cáncer gástrico o ulcus penetrante.

"Es necesario saber si hay o no ptosis intestinal, cuanto tiempo la substancia opaca se detiene en los diferentes segmentos del intestino, si hay o no extasis ileal; es decir: una serie de exploraciones y radiografías capaces de dar luz sobre el caso clínico en cuestión.

"El exámen químico es también indispensable. Es necesario saber el grado y curva de la acidéz, así como los diferentes detalles relativos al quimismo. Es necesario hacer un exámen completo del sistema nervioso que nos pueda indicar una tabes frusta.

"Es necesario hacer un exámen de sangre con dozage de la azotemia. Es necesario despitar la sífilis. Un gran número de úlceras son de origen sifilítico y necesitan un tratamiento específico. En las orinas buscar la acidosis, frecuente en los sujetos deprimidos y que requieren un tratamiento anti-acido.

"Hacer la prueba de la sulfo-fenolptaleina para controlar el estado de la azotenia."

Por otra parte el clínico debe tener en cuenta cuando examina a un gastropáta, que casi todas las personas que vienen a nosotros quejándose del estómago no sufren de el; así nos dicen los maestros que de diez enfermos que se quejan de dispepsia atribuída al estómago, nueve no tienen ninguna lesión gástrica.

Siguiéndonos por las indicaciones de los maestros Pauchet (francés) y Baldo Rossi (italiano) además del examen clínico preciso y de los exámenes de sangre, orina, quimismo gástrico y documentación radiológica, nuestro enfermo requiera una buena desinfección de la nariz, de la garganta, de los dientes y vaciar el contenido del intestino grueso por medio de lavados adicionados de accite o glicerina.

Lavamos el estómago durante los tres o cuatro dias anterioreas del acto operatorio, no sólo para desinfectarlo, sino también para acostumbrar al enfermo por si fuere necesario lavarlo post-operatoriamente. Debemos recordar que todo operado que vomita hay que lavarle el estómago. Esta medida nos ha sido de verdadera utilidad en la práctica y estamos convencidos de su eficacia, a pesar de que algunos cirujanos opinan que estos lavados pre-operatorios son innecesarios.

ANESTESIA

Hemos proscrito completamente las anestesias generales por inhalación y la raquianestesia. Recurrimos generalmente a la anestesia esplánica posterior y local del campo operatorio.

No dudamos que la anestesia esplácnica anterior es muy buena, pero no es fácil realizarla en infinidad de casos y ya en la mesa operatoria tendríamos que recurrir a otras anestesias que no deseamos tener que usar.

La esplácnica posterior la prácticamos por medio de dos inyecciones laterales de 30 cc., cada una, de una solución de novocaína al 1 por ciento. La local del campo operatorio la hacemos con una solución de novocaína al 1 por 200.

En ciertos casos, especialmente símpatico-tónicos la anestesia local es insuficiente y en ellos, como en muchos otros operados en años anteriores, hemos practicado como anestesia el Evipán sódico por vía venosa.

"Los resultados post-anestésicos han sido excelentes. Esta clase de enfermos la toleran admirablemente y se obtienen en ellos, debilitados como llegan a la mesa operatoria, una anestesia completa con pequeñísimas cantidades.

"Podemos decir que en un 99 por ciento de los casos desaparecen los vómitos y angustia post-operatorio y no decimos en el 100 por ciento de los casos pues en uno de nuestros operados hubo que lavarle repetidas veces el estómago, durante el período post-operatorio, a pesar de haberle sido administrado la pequeña cantidad de 0.80 centígramos de Evipán,

tuvimos en él una grave complicación por un estado de hipocloremia que necesitó una remineralización intensa y que nos hizo temer por unos días un círculo vicioso.

"Siempre nos ha servido el Evipán por si sólo para llevar a cabo nuestras operaciones, con anestesia desde 45 minutos, tiempo mínimo empleado en nuestras gastro-pilorectomías, hasta una hora y veinte minutos que ha sido la operación más larga practicada con anestesia por Evipán, por encontrarnos ante un caso de úlcera degenerada de la pequeña curvadura y fuertemente adherida al pancreas, en la cual fué necesaria una labor ardua y minuciosa."

En el Hospital Vargas de Caracas, pero no en un caso de mi Servicio se ha llegado a anestesias de una duración de dos horas veinte minutos y la mayor cantidad inyectada, en dosis fraccionadas, ha sido de 17 cc. de la solución de Evipán al 1 por 10.

Qué observamos nosotros: ¿que dicen los enfermos?

Anestesis perfecta, silencio abdominal absoluto, no comparable sino con el de las mejores raqui-anestesias y despertar tranquilo. No acusan *dolor de cabeza, ni vomitan* y no dan ningún signo subjetivo desagradable.

¿QUÉ OPERACION PRACTICAMOS?

En todos los casos de úlcus gástrico o duodenal y siempre que ella sea posible la única que consideramos como tratamiento curativo. La gastro-pilorectomía (Polya-Reichel, procedimiento Finsterer con pequeñas modificaciones personales (Corachan y Castilla) que expondrémos:

Ulcus Gástrico.—El procedimiento curativo es la supresión del piloro y de toda la porción del estómago sobre el cual el ulcus evoluciona. Corrientemente se hará la gastro-enterostomía por implantación del muñón gástrico en la convexidad del yeyuno (Polya). Siempre que sea posible el procedimiento trasmeso-cólico posterior, con asa corta, es el que dá los mejores resultados (Polya-Reichel).

La anastomosis de la brecha total gástrica al yeyuno con fijación de la brecha meso-cólica al estómago (Polya-Reichel-Finsterer) que es el procedimiento empleado por nosotros en todos nuestros casos, es garantía suficiente del buen funcionamiento de la boca anastomótica.

En los ulcus situados muy altos practicaremos la gastrectomía en canal de Pauchet, la cual los cura completa y *definitivamente* sin aumentar la mortalidad operatoria.

Ulcus Duodenal.—¿Qué operación prácticaremos para el úlcus duodenal? La Gastro-pilorectomía. ¿Porque? Porqué en estos casos y aunque el estómago está sano y tan solo lesionado el duodeno, éstos son los casos con fuerte hiperacidéz en los cuales el sujeto hace con gran frecuencia un ulcus yeyunal secundario algunos meses más tarde.

Suprimiendo la mitad del estómago hiperpéptico se realiza la hipopepsia lo que previene el ulcus yeyunal. Si el operador quita el duodeno ulcerado hace el mejor de los procedimientos, pero si está duodenectomía es muy difícil, la úlcera está situada baja y la disección duodeno pancreatica sangra abundantemente, no debe insistirse en hacerla, se deja el duodeno excluído en virtud de la resección gástrica y se hace la anastomosis gástro-yeyunal por implantación termino lateral (Polya).

Es necesario recordar que las úlceras duodenales no degeneran sino excepcionalmente y además que la úlcera en un medio constantemente alcalino cura definitivamente.

En los casos de urgencia debe hacerse la operación mínima aunque tengamos que reoperar nuestro enfermo algunos meses más tarde, sin embargo, si las lesiones son enormes, la constitución general del sujeto se presta y el cirujano es experimentando, se puede, aún en ciertos

casos de urgencia practicar una gastrectomía.

Proporcionar la importancia de la operación a la gravedad del mal y a la resistencia del enfermo. No temer operar al enfermo dos veces, para evitarle morir en una sola operación.

Mas vale curar al enfermo en dos operaciones, que matarle en una sola (Pauchet). Esta es la única indicación que hoy creemos existe para una simple, gastro-entero-anastomosis, que significará el primer tiempo de una gastrectomía ulterior.

ALGUNOS DETALLES DE LA TÉCNICA OPERATORIA

La liberación de la gran curva dura no la practicamos como aconseja Temoin de un golpe de compresa, sino por ligadura minuciosa entre dos pinzas conservando la arcada vascular (Corachan).

La sutura del cabo duodenal la hacemos en tres planos, a los dos de uso corriente agregamos uno tercero entre la serosa duodenal y la cápsula pancreatica (Corachan).

Cuando tememos encontrarnos ante una úlcera degenerada hacemos la recepción total del epiplón gástro-colico donde se alojan ganglios, fuente de futuras metastasis.

Todas nuestras suturas las hacemos con catgut crómico 00, con aguja atraumatica (Castillo).

Las suturas sero-serosas posterior y anterior las hacemos con puntos de Cushing. La sutura total posterior con puntos en Feston.

La sutura total anterior con puntos de Connel, con aguja curva y porta aguja (Corachan) o con aguja recta y pinza de Judd (Castillo).

Hecha la sutura del cabo duodenal y cuando vamos a trabajar sobre el estómago y antes de proceder a hacer la sutura sero-serosa posterior, abrimos de una véz la brecha meso-colica y fijamos su borde posterior a la cara posterior del estómago, este pequeño detalle es de gran utilidad y lo aconsejamos a todos los que practican esta cirugía (Corachan).

Cuidados post-operatorios immediatos.—Son de todos Uds. conocidos y tan sólo quiero llamar la atención del hecho del uso del aparato de aspiración continua o gastro-evacuador, con su uso no es necesario practicar lavados del estómago, pues éste está vacío continuamente, a la vez que permite suministrar agua a nuestros operados desde el primer momento, lo que no solo mitiga la sed sino que sirve de lavado constante. Nosotros seguimos en ese sentido la conducta siguiente: inmediatamente que regresa el enfermo a la cama se le pasa por una de las fosas nasales una sonda de succión gástrica y se conecta con el aparato. Se le suministra a nuestro enfermo desde el primer día medio vaso de agua cada dos horas, poniendo a funcionar el aparato inmediatamente después. Con su uso hemos obtenido magníficos resultados.

"A los que dicen que la gastrectomía por ulcus duodenal es mucho más grave se les debe contestar: que es necesario tomar en cuenta los antiguos operados que mueren algunos meses o algunos años más tarde después de la gastro-enterostomía."

Nosotros practicabamos gastro-entero-anastomosis hasta mediados del año de 1933, pero de ahí en adelante, bien entendido que con sus excepciones, no solo prácticamos gastrectomías en los ulcus gástricos, sino también en las úlceras duodenales.

¿Porqué algunos cirujanos no están de acuerdo en reducir la práctica de la gastro-enterostomía?

El tratamiento del ulcus duodenal es la resección amplia del estómago y duodeno y la liberación de la pequeña curvadura. Esta operación da un 95 por ciento de curaciones definitivas, dejando ese 5

por ciento esquemático, ya que la úlcera es una consecuencia y no un accidente, puede reproducirse o estar acompañada de otras lesiones concomitantes.

Si todos los cirujanos no están de acuerdo en la adopción sistemática de la gastrectomía, es porque ella es una operación grave, en manos de aquellos que no sean expertos en esta materia, una de las más bellas y sugestivas ramas de la cirugía.

"La gastro-entero-anastomosis tan solo requiere dos maniobras; una sutura hemostática y una anastomosis bien aplicada, en buena dirección y en buen sitio.

"La gastrectomía con sus variantes requiere la adquisición de 20, 30, 40 maniobras que deben ser ejecutadas automáticamente, automatismo que no se adquiere sino en aquella cirugía que se conoce bien. Las maniobras automáticas hacen las intervenciones benignas, puesto que son ejecutadas siempre correctamente.

"Ahora bien, para que un acto pase en el sub-conciente, para que sea reflejo, automático, es necesario repetirlo mucho. Es necesario pues, que el cirujano que practica la gastrectomía se haya creado una experiencia especial por el número de casos tratados (Pauchet)."

SUMARIO

Se acepta la denominación de úlceras gástricas y duodenales, aplicable a los procesos ulcerosos de aquellas zonas expuestas al contacto del jugo gástrico. Sirven de base principal a la comunicación ochenta gastropilorectomías. Se considera que toda ulceración aguda y reciente es tributaria inmediata del tratamiento médico, pero la tendencia a la cronicidad, especialmente en los casos que no se han beneficiado con la terapéutica médica, plantea desde luego la conducta quirúrgica radical. La indicación operatoria formal debe prevalecer sobre esperanzas infundadas y esperas peligrosas, si se desea actuar en condiciones adecuadas y favorables. Sin descartar el valor clásico de la clínica pura, se reconoce la justa importancia que tiene la exploración radiológica, especialmente radiográfica, para el diagnóstico correcto. Se menciona la conveniencia de la gastrectomía, cuyo porcentaje de mortalidad se afirma no mayor del 2 por ciento en manos de cirujanos expertos y en momento oportuno. Se hacen citas sobre el estudio y preparación preoperatoria del enfermo ulceroso, criterio sobre anestesia, y algunos detalles de la técnica usada en las intervenciones practicadas.

RÉSUMÉ

On emploie le terme "ulcères gastriques et duodénaux" pour désigner les ulcérations exposées au suc gastrique. L'auteur recommande le traitement immédiat de ces lésions qu'elles soient avous on chroniques. Car elles ont une tendance á devenir chroniques. Afin d'obtenir de bons résultats, il ne faut pas retarder l'entervention chirurgicale. L'opération de choix est la gastrectomie dont la mortalité n'est que de deux pour cent dans les mains de chirurgiens entraînés. Il importe de confirmer le diagnostic par l'étude roentgenographique du cas. L'auteur discute la préparation pré-opératoire du malade les criteria par rapport à l'anesthésie et la technique chirurgicale.

Выводы

Термин "желудочная или дуоденальная язва" употребим к язвам предоставенным действию желудочного сока. Все язвы, острыя или менее острыя, нужно сейчасже лечить, так как оне всегда проявляют наклонность к хроничеству. По этому не следует откладывать хирургическое лечение. Гастректомия представляет найлучший метод, давая пониженную смертельность (2 процента) в руках опытных хирургов. Рентгенографный диагноз необходим. Автор описывает до-оперативную подготовку больного, выбор анастезии и оперативную технику.

Editorials

Carcinoma of the Breast with Negative Biopsy

ASA B. FRIEDMAN (*Bul. Adelphi Hosp., Brooklyn, N. Y.*) reports a case of carcinoma of the breast, which emphasizes the fact that a pathologist's report should be subject to the same limitations as any other observation or symptom, subjective or objective, and particularly when the findings are negative and contradictory to the clinical evidence.

A married woman, aged 36, complained of severe pain at the base of the neck, posteriorly, radiating to both arms, especially the left. There was pain also in the lower back and pelvis. The relevant previous history was that she noticed a small mass in her right breast in September, 1941. This was excised for biopsy examination. The surgeon suspected malignancy and was prepared to perform a radical mastectomy. The pathological report stated: "Sections show fat and areas of necrosis and acute inflammatory change. A few glandular structures are present, lined by regular cuboidal epithelium. These glands are arranged in compact acini. There is no evidence of neoplasia. *Diagnosis:* Liponecrosis of the breast. Chronic inflammatory changes." This report influenced the surgeon against further surgery.

When the patient was seen a year later, the mass in the breast had recurred in the form of a multinodular tumor with extension to the axilla and supraclavicular fossa. The patient had been told at the time of the pathologist's report that the condition was not serious and she, therefore, did not return for follow-up examinations. The multinodular mass was attached to the skin and infiltrated the outer third of the breast. Palpable nodes were found in the right axilla and a small node was present in the right supraclavicular fossa. Obviously, the case was hopeless as far as cure was concerned, but it is possible that if further sections had been made at the time the biopsy was done, evidence of malignancy might have been found. In any event, even though the surgeon accepted the pathologist's report in preference to his own correct clinical opinion, the tragic result might have been averted if the patient had been told of the possibility of malignancy and the urgent necessity of remaining under further observation. The case is instructive in that it illustrates the tendency to ac-

cept a negative laboratory report as the final diagnosis, instead of considering such reports as merely a complement of the clinical evidence.

A. L. Wolbarst, M.D.

Surgical Isolationism

DISCUSSING the standardization of the surgeon before the Section on General and Abdominal Surgery of the American Medical Association in June, 1914, Dr. J. M. T. Finney defined the surgeon as a member of "a profession ennobled by men actuated solely by their desire to devote their time and their talents to the relief of suffering humanity, willing, yes, at any time, if need be, to lay down their own lives for those of their fellowmen; whose membership should embrace only men of singleness of purpose, unselfish, high-minded, zealous in their efforts to wrest from Nature the keys to her many mysteries; men who unconsciously, perhaps, in character and conduct, reflect in varying degrees the life and spirit of the Great Physician; a profession free from taint of commercialism or graft, in which there shall be no room for the base, the unscrupulous, the ignorant or the unskilled; in which the test for membership has to do only with character and attainment."

Who among us, three decades later, would say that this standard set by Dr. Finney is too idealistic and unattainable? Yet, how close have we come to realizing that standard? Both the science and art of surgery have come far since the early days of the barber surgeons. A tremendous progress has been made since the discovery of anesthesia and each year thereafter surgeons have become more skillful and more daring. With the increase in knowledge and skill, have the surgeons themselves become equally great in character and purpose?

From earliest times one of the greatest misfortunes for the advancement of surgery has been secrecy among the profession. Just as Peter Chamberlen's invention of the forceps early in the Seventeenth Century was kept a family secret, just as Colot kept secret for many years the method of lithotomy that had been passed on to him, and just as rhinoplasty had been concealed for generations by the Branca family, so have too many modern surgeons kept secret their own discoveries and inventions to the glorification and material benefit of themselves. The great ethical standard of the medical profession that demands the sharing of all medical discoveries for the good of mankind and without profit to any individual, is sometimes willfully forgotten. To some measure, time has eroded this cancerous spot from the escutcheon of surgical endeavor.

A modern influence that has retarded the advance of surgery is a certain po-

litical smugness that has crept into the ranks, equalling sometimes the smug conceit of a Paracelsus, whereby a surgeon is rated not by his individual attainments but by his political backing. Appointments to hospital staffs and election to membership in specialized groups are determined by a select few who allow personal bias to determine a surgeon's fitness for recognition. Too often selection is made in the manner of a collegiate fraternity rather than in a truly scientific procedure. To a successful skillful surgeon this bias against him does little harm, except to his self-esteem, but to the fine young surgeon who is earnestly struggling toward the idealism of Dr. Finney, it may be a direct factor in retarding his professional growth. He is denied the close contacts with the learned men of his chosen profession, from whom he might gain so much in education and inspiration.

The evil effects of this exclusion are about nil at this time of a world war when every surgeon is needed and is giving his best. But while the learned executives of other professions and of the economic circles are sitting in long conferences, endeavoring to fashion a new world that shall follow the war, a world where individual rights shall be recognized and prevail, what is the surgical profession doing to elevate its own members and what plans is it making for the healing of the peoples of the earth?

Since Pearl Harbor, isolationists have become internationally minded. Great nations, differing from each other in a multitude of ways, have joined forces to defeat a vicious world enemy. After victory is won, representatives will meet at the conference table, endeavoring to lay down a lasting peace. Shall the surgical profession stand idly by and take no part in this great plan?

The International College of Surgeons, since its inception, has had for its platform the "gathering together of eminent surgeons of each Nation, Free State and Dominion of the world into one great organization, with the thought in view that the personal exchange of views of leaders in surgery will do much to advance the science of surgery and also promote a better understanding between those who, in every country, are working for the good of humanity."

The College further seeks to encourage its members to original research. Nationality, creed and race are disregarded in its ranks. No other association in medicine or surgery has so extensively exercised this international relationship. Its membership has been gathered from many nations, elected solely on individual merit. The cultivation of cordial relations and the exchange of surgical information between the Fellows and Members of these countries is continuously encouraged. Above all, its aim is an *entente cordiale* between all existing surgical organizations.

Now, more than ever before, the surgical profession must unite to bring about a better understanding and appreciation of all nations, mutually sharing surgical knowledge and training the less skillful, so that a more perfect manhood may be fashioned to meet the problems of a new world.

M. T.

(Continued from page 156)
Nominations. On the first day of the annual meeting, the President shall appoint a Committee on Nominations consisting of five delegates, if possible, one from each country represented at the meeting. The Committee on Nominations shall report to the House of Delegates, the ticket containing the names of one or more members for each of the offices to be filled at the annual meeting." ARTICLE VII is hereby amended by adding a new paragraph thereto to be known as Paragraph 13, which shall read as follows: "13. It shall be the duty of each member of the Board of Trustees of the International College of Surgeons to attend all meetings of the Board; provided, however, that it shall be a valid excuse for failure to attend if the meeting shall be held in a country other than that in which the member resides. "In the event that a member of the Board of Trustees shall fail to attend three successive Board meetings without forwarding to each of such meetings a

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Fourth International Assembly
In Conjunction with the Eighth National Assembly
of the United States Chapter

International College of Surgeons

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Dr. Esteban Paulín Gonzalez, F.I.C.S.
Dr. Gustavo Argil, F.I.C.S.
Dr. Luis de la Rosa, F.I.C.S.
Morocco: Col. Perard, F.I.C.S.
Palestine: Dr. Felix Mandl
Panama: Hon. Augusto S. Boyd
Dr. Louis D. Alfaro
Dr. Jaime de la Guardia
Paraguay: Dr. Manuel Giagni
Dr. Manuel R. Molinari
Col. Luis Santiviago, F.I.C.S.
Peru: Dr. Francisco Grana
Dr. Constantino J. Carvallo
Dr. Fortunato Quesado, F.I.C.S.
Dr. Francisco Villagarcia
Dr. Ezequiel Martinez
Dr. Cesar Heraud
Portugal: Dr. Francisco Gentil
Rhodesia: Sir Godfrey M. Huggins
Spain: Dr. Leon Cardenal
Switzerland: Dr. Charles Juillard
Dr. Paul Martin
Trinidad: Dr. E. J. A. Boucoud
Turkey: Dr. Mehmet Emin Erkul
Dr. B. Hazum
Dr. R. Rabbani
Uruguay: Dr. Eduard Blanco Acevedo
Dr. Domingo Prat
U.S.S.R.: Dr. Nikolai Burdenko
Venezuela: Dr. Herman de Las Casas

LADIES' COMMITTEE

Chairman: Mrs. Fred H. Albee, Nokomis, Florida
Vice-Chairman: Mrs. Chester A. Peake, Brooklyn, N. Y.

MARSHAL OF CONVOCATION

Dr. Benjamin I. Golden, Elkins, West Va.

FOURTH INTERNATIONAL ASSEMBLY
OF
INTERNATIONAL COLLEGE OF SURGEONS

In Conjunction with Eighth National Assembly of United States Chapter

Waldorf-Astoria Hotel, New York City

June 14-16, 1943

PRELIMINARY PROGRAM

Dr. A. A. Berg, Chairman, Program Committee

The program will have as its main theme, "War Surgery and Rehabilitation." The Assembly has been endorsed by Surgeon General Magee of the U. S. Army and Surgeon General McIntire of the U. S. Navy. If their appointments permit they will endeavor to attend the Assembly and deliver addresses.

The subjects to be discussed include:

WAR SURGERY

First Aid Treatment of the Injured
First Aid and Early Treatment of Disfiguring Injuries
Infected Wounds
Chemotherapy
Transportation of the Wounded
Burns
Gas Casualties
Anesthesia
Air Casualties
Skeletal Injuries
Injuries of Internal Organs (Chest, Abdomen, Genito-urinary Tract)
Injuries of the Brain, Spinal Chord and Nerves
Blast Injuries
Vascular Injuries

REHABILITATION

Plastic and Reconstructive Surgery
Reconstructive Surgery of the Bones and Joints
Physical Therapy
Chronic Diseases Due to War Casualties, Including dominal Organs and the Nervous System
General Allied Subjects

An informal dinner will be followed by addresses given by high ranking officers of the Army and Navy.

The *Scientific Exhibits* and the motion pictures to be shown will be of special interest. There will also be *Military and Rehabilitation Exhibits* presented by various National and State organizations. These will be found in the west foyer on the third floor of the Waldorf-Astoria Hotel. Among them will be a visual demonstration of the work of rehabilitation by the New Jersey Rehabilitation Commission, presenting its curative workshop, under the personal direction of Dr. J. C. Kupper.

The Veterans Administration of Washington, D. C., Dr. Charles M. Griffith, Director, will exhibit charts showing pictures and descriptions of the routine and special measures in *bibliotherapy, occupational therapy* and *physical therapy* used to aid in the treatment of patients in the Veterans Administration hospitals. The Universal School of Handicrafts, chartered by the Board of Regents of the State of New York, and now engaged in a study of creative activities for rehabilitation, will present material and findings in this particular field, under the personal direction of Edward T. Hall, Director.

The Medical Department of the 17th Regiment, New York State Guard, will set up a Regimental Aid Station, under the direction of Donald R. Beck, Regimental Surgeon. The personnell will consist of the medical detachment who will be in daily attendance, the officers attached being Cop tainW. R. Hatfield, Captain John Murphy and Captain Harold Belcher.

PARTIAL LIST OF SPEAKERS

LT. COL. R. C. SPURLING, M.C.
Chief of Neuro-Surgery Section
Army Medical Center
Walter Reed Hospital
Washington, D. C.

COL. LEONARD G. ROWNTREE
National Chief of Medical Division
Selective Service System
Washington, D. C.

COL. LEWIS SANDERS
Chief of Re-employment Division
Selective Service System
Washington, D. C.

COMDR. BARTHOLOMEW W. HOGAN, M.C., U.S. Navy
Bureau of Medicine and Surgery
Navy Department
Washington, D. C.

BRIG. GEN. FRANK P. HINES
Veterans Administration
Washington, D. C.

DR. ROBERT MERILL, *Comdr.-in-Chief*
Veterans of Foreign Wars

LT. COL. DOUGLAS B. KENDRICK
Army Medical School
Washington, D. C.

DR. PHILIP WILSON, *Medical Director*
American Hospital in Great Britain
New York, New York

CAPT. R. HAYDEN, M.C., U.S. Navy
Commandant, Third Naval District
New York, New York

LT. COMDR. JOHN B. HARTZEL, M.C., V. (S).
United States Naval Reserve
Oakland, California

CAPT. W. M. CRAIG, M.C., U.S. Navy
United States Naval Hospital
Bethesda, Maryland

CAPT. CAMILLE M. SHARR, M.C., U.S. Navy
Philadelphia, Penna.

DR. CHARLES M. GRIFFITH, *Medical Director*
Veterans Administration
Washington, D. C.

COL. RAYMOND BLISS, M.C.
Surgeon First Army
Governor's Island

DR. WILLIAM CARPENTER MacCARTY
Mayo Clinic
Rochester, Minnesota

DR. WILLIAM D. RYAN, *Chairman*
Veterans of Foreign Wars
Detroit, Michigan

DR. WILLIAM D. McFEE, *President*
American Academy of Physical Medicine
Boston, Massachusetts

DR. THOMAS A. SHALLOW
Philadelphia, Penna.

MR. RODNEY MAINGOT
London, England

DR. FELIX MANDL
Palestine

DR. FRED H. ALBEE
New York, New York

DR. JACQUES W. MALINIAC
New York, New York

DR. RUDOLF NISSEN
New York, New York

DR. WILLIAM SEAMAN BAINBRIDGE
New York, New York

DR. J. RUDOLPH JAEGER
Denver, Colorado

SURGEON GENERAL JAMES C. MAGEE
United States Army
(Tentative)

DR. THOMAS B. NOBLE, JR.
Indianapolis, Indiana

DR. ERNEST W. BERGMAN
New York, New York

SURGEON GENERAL ROSS T. McINTIRE
United States Navy
(Tentative)

ADMIRAL NOBLE
British Naval Staff
(Tentative)

The *Manuel Corachan Memorial Oration in Surgery* will be given by

PROF. HERMAN DE LAS CASAS, *Dean*
National Medical University
Caracas, Venezuela

A *special delegation from Mexico* will give a *symposium on War Surgery. Delegates, representatives and speakers from the following Latin Countries are expected to attend*:

VENEZUELA	COLUMBIA
ARGENTINE	CUBA
PERU	COSTA RICA
HONDURAS	PANAMA
BAHAMAS	BOLIVIA
BRAZIL	ECUADOR
HAITI	PARAGUAY

URUGUAY

ENGLAND, RUSSIA, TURKEY, PALESTINE AND OTHER COUNTRIES

MOTION PICTURE PRESENTATIONS

COMMERCIAL EXHIBITS

For hotel reservations address

MR. JOSEPH L. BOWLING, *Office Manager*
Waldorf-Astoria Hotel
New York, N. Y.

CONSTITUTION AND BY-LAWS OF THE UNITED STATES CHAPTER

(Continued from page 166)

3. A District Credential Committee composed of three fellows shall be appointed by the President of the Guilds of each of the districts to pass on the general moral, ethical and professional qualifications of all applicants for membership. The Chairman of this committee shall render a report on the candidates to the Board of Examiners prior to the giving of the technical examinations to the applicant. Their term of office shall run concurrently with that of the District Guild Presidents.

This committee may be secret if the President of the Guild so desires.

Article XIV.

Post Graduate Educational Guilds.

1. Regents, Fellows and Members, and Associate Members in each district shall be organized as a Study Guild.

2. All the study guilds shall be under the jurisdiction of the Board of Governors which is itself answerable to the Executive Council and its President.

3. The study guild in each district shall elect its own officers.

4. The educational activities of the study guilds shall consist of:

A. Clinical Teachings.

B. Postgraduate Courses.

5. *Clinical Teachings* shall consist of operative demonstrations accompanied with clinical didactic discussions bearing on the cases under operation.

6. *Round-table Discussions* in which free general participation shall be encouraged.

7. *Dry Clinics* shall be held.

8. Postgraduate Courses shall be organized and given at designated teaching centers. Special courses of Regional Surgical Anatomy on the cadaver shall form a very important feature of the educational program, as well as courses in animal surgery.

These courses shall be given by a competent anatomist supported by a surgeon known for his knowledge of surgery in the regional field under discussion.

9. Special Courses of *Pathology, post-mortem* and *microscopy* shall be organized.

10. Special courses in allied branches such as bacteriology, anesthesia, genito-urinary cystoscopy and catheterism, etc., shall complete the curriculum.

11. The frequency of these guilds teachings shall be left to the discretion of the Board of Governors.

12. The Board of Governors shall be empowered to require moderate fees from the attendants for defraying expenses.

13. Attendance at these post-graduate teachings shall be made obligatory.

14. The choice of the best methods of carrying out the post-graduate teachings shall be left to the discretion of the Board of Governors.

15. The Secretary-Treasurer of the Guild shall render a detailed financial report to the National Business Secretary, January first and July first of each year.

Article XV.

Auditing and Appropriation Committee.

1. The President shall appoint an Auditing and Appropriation Committee of three members chosen from the Executive Council, who shall serve for a term of two years, subject to re-election.

2. This Auditing and Appropriation Committee shall prescribe the method of accounting to be used for all accounts of the Chapter.

3. This Committee shall scrutinize all expenditures of the Chapter and shall submit a report every three months to the Executive Council on the financial conditions of the Chapter.

4. After conference with the President of the Chapter, it shall prepare and present annually to the President a *budget* providing funds for the contemplated expenses of the Chapter for the ensuing year.

5. Any unused surplus of funds for a given term of two years shall be placed in a sinking fund which is under supervision of the Board of Trustees.

Salaries.

1. The salaries of all employees and officers shall be fixed by the Executive Council and shall be paid by the Treasurer.

Article XVI.

Vacancies.

1. The Executive Council, through its President, shall fill by appointment all vacancies occurring in the interval between annual meetings.

2. The appointee shall serve until the successor has been elected and qualified.

Article XVII.

Upon the adoption of these By-Laws all previous By-Laws are hereby repealed and declared *null* and *void*.

(Continued from page 166)

statement setting forth such reasons for non-attendance as shall appear valid to the Board, then without further notice his office shall be declared vacant by The Board of Trustees, and the vacancy shall be filled as provided in ARTICLE XXII of the Constitution of the International College of Surgeons, and if said members shall have been a member of the Board of Trustees by virtue of his having been an officer in the Central Organization of the International College of Surgeons, then, upon his failure to attend meetings as aforesaid, he shall cease to be an officer of said Central Organization, and the vacancy of his office shall be filled as provided in ARTICLE XXII of the Consitution of the International College of Surgeons." ARTICLE IX of the By-Laws shall be amended by adding a new Paragraph 9 to read as follows: "9. If any Chapter shall secede or withdraw from the International body or shall incorporate separately, or shall attempt so to secede, withdraw or incorporate, all of its funds and all other property shall thereupon be and become the property of the International body and shall forthwith be surrendered to it; and the Charter of such Chapter shall thereupon be revoked." ARTICLE XI of the By-Laws shall be amended by striking out the period (.) after the year 1935 and by placing a comma (,) in lieu thereof, and adding the following wording: "and as ratified by the International Meeting in Philadelphia, October 14, 1938, and as amended at the International Assembly held in New York City, N. Y., May, 1939, and as further amended in New York City, N. Y., March 8, 1941 and as further amended by the International Assembly in Mexico City, August 11, 1941, and the United States Chapter Assembly, August 12, 1941." Any legal disputes that may arise between various chapters and the Central Organization shall be adjudicated in Washington, D.C.

Paragraph 2 of Article X of the Constitution is amended to read as follows: "The General Scientific Assembly shall consist of all the members of the International College of Surgeons in good standing." Paragraph 3 of Article X of the Constitution is amended to read as follows: "The House of Delgates shall hold its regular meetings during the regular International General Assembly of the College and shall constitute the Supreme Legislative Body of the College."

HONOR ROLL

DEDICATED TO THE FOLLOWING MEMBERS OF THE INTERNATIONAL COLLEGE OF SURGEONS NOW SERVING IN THE ARMED FORCES OF OUR COUNTRY

MEDICAL CORPS—ARMY

W. D. Anthony	Lieutenant	Gallup, N. M.
C. H. Arnold	Major	Lincoln, Neb.
W. A. Baird	Captain	Toledo, Ohio
W. N. Baker	Lieutenant	Denver, Colorado
E. V. Benbow	Major	Winston-Salem, N. C.
M. Berlind	Major	Jackson Heights, N. Y.
J. W. Bowers	Lt. Colonel	Fort Wayne, Ind.
N. A. Brethouwer	Captain	Montrose, Colo.
W. C. Burket	Major	Evanston, Ill.
W. J. Carrington	Lt. Colonel	Atlantic City, N. J.
D. C. Collins	Lt. Colonel	Beverly Hills, Calif.
H. A. Conrad	Major	Elkins, W. Va.
M. W. Cooke	Captain	Longmont, Colo.
W. L. Cooke	Captain	Charleston, W. Va.
C. W. Countryman	Major	Spokane, Wash.
R. H. Fouser	Major	Oak Park, Ill.
F. D. Fowler	Captain	Idaho Springs, Colo.
C. H. Fredrickson	Lt. Colonel	Missoula, Mont.
P. Gallgaher	Lt. Colonel	El Paso, Texas
L. Gambert	Lieutenant	Brooklyn, N. Y.
L. A. Giffin	Captain	Alton, Ill.
L. D. Goldberg	Lieutenant	Poughkeepsie, N. Y.
S. L. Governale	Major	Chicago, Ill.
R. L. Hamilton	Major	Marysville, Calif.
E. G. Hardenbrook	Captain	Rochester, N. Y.
*L. D. Harris		Poughkeepsie, N. Y.
E. L. Harvey	Major	Denver, Colo.
H. L. Hauman	Captain	Toledo, Ohio
J. D. Hayes	Captain	Little Rock, Ark.
A. Hinson	Captain	Rock Hill, S. C.
D. W. Hodges	Major	Denver, Colo.
H. G. Holder	Lt. Colonel	San Diego, Calif.
A. Jacobsen	Captain	New York City
H. L. Jaworski	Major	Waco, Texas
B. A. Karwowski	Captain	Toledo, Ohio
H. B. Kellogg	Lt. Colonel	Seattle, Wash.
J. L. Lamey	Captain	Anderson, Ind.
J. D. Lamon, Jr.	Major	Albuquerque, N. M.
N. G. Long	Captain	Lowell, Mass.
F. S. Mainzer	Major	Huntingdon, Penn.
J. M. McGehee	Lieutenant	Cedartown, Ga.
B. E. McConville	Captain	Seattle, Wash.
C. E. Nagel	Captain	Great Falls, Mont.
G. F. Netherton	Captain	Denver, Colo.
R. A. Nethery	Lieutenant	Pueblo, Colo.
R. C. Peale	Captain	Olean, N. Y.
J. F. Pick	Major	Chicago, Ill.
R. L. Preston	Major	New York City
E. V. Pyle	Lieutenant	Middletown, N. Y.
E. E. Rider	Major	Lincoln, Neb.
M. M. Rosenberg	Major	Scranton, Penn.
K. C. Sawyer	Major	Denver, Colo.
E. Seletz	Captain	Los Angeles, Calif.
M. W. Selman	Captain	Toledo, Ohio
C. A. Shepard	Captain	Rochester, N. Y.
G. C. Shivers	Major	Colorado Springs, Colo.
W. P. Smith	Major	Columbus, Mont.
A. L. Sparks	Major	Indianapolis, Ind.
H. J. Subin	Captain	Atlantic City, N. J.
L. T. Sussex	Lt. Commander	Havre, Mont.
C. E. Towne	Captain	Waterville, Maine
J. G. Towne	Brig. General	Waterville, Maine
J. R. Vasko	Major	Great Falls, Mont.
J. W. White	Major	Scranton, Penn.
P. W. Whiteley	Lt. Colonel	Denver, Colo.
J. E. Wyttenbach	Major	Indianapolis, Ind.
E. R. Zaglio	Lieutenant	Manchester, Conn.

MEDICAL CORPS—NAVY

W. G. Ball	Lieutenant	Bloomington, Ill.
H. I. Barnard	Lt. Commander	Denver, Colo.
E. H. Dickinson	Lt. Commander	Philadelphia, Penn.
G. S. Foster	Lt. Commander	Manchester, N. H.
C. S. Gallaher	Lt. Commander	Rochester, N. Y.
L. V. Gibson	Lt. Commander	Lincoln, Neb.
A. M. Glickman	Lt. Commander	Springfield, Mass.
*J. M. Greer		Phoenix, Arizona
H. H. Kessler	Lt. Commander	Newark, N. J.
W. H. Mast	Lt. Commander	Gunnison, Colo.
W. A. Neill	Commander	Toledo, Ohio
D. H. O'Donnell	Lt. Commander	Detroit, Mich.
J. K. Patterson	Lt. Commander	Santa Barbara, Calif.
R. G. Ray	Lieutenant	Tulsa, Okla.
W. T. Rich	Lieutenant	Neodesha, Kans.
R. E. Scovel	Lt. Commander	San Francisco, Calif.
H. P. Sloan	Lt. Commander	Bloomington, Ill.
O. P. Smith	Lt. Commander	Troy, N. Y.
J. J. Stein	Lieutenant	Hines, Ill.
*C. W. Trexler		Hawaii
M. Weintrob	Lt. Commander	Brooklyn, N. Y.
M. F. White	Lt. Commander	Philadelphia, Penn.

*Rank unknown to editor; kindly notify.